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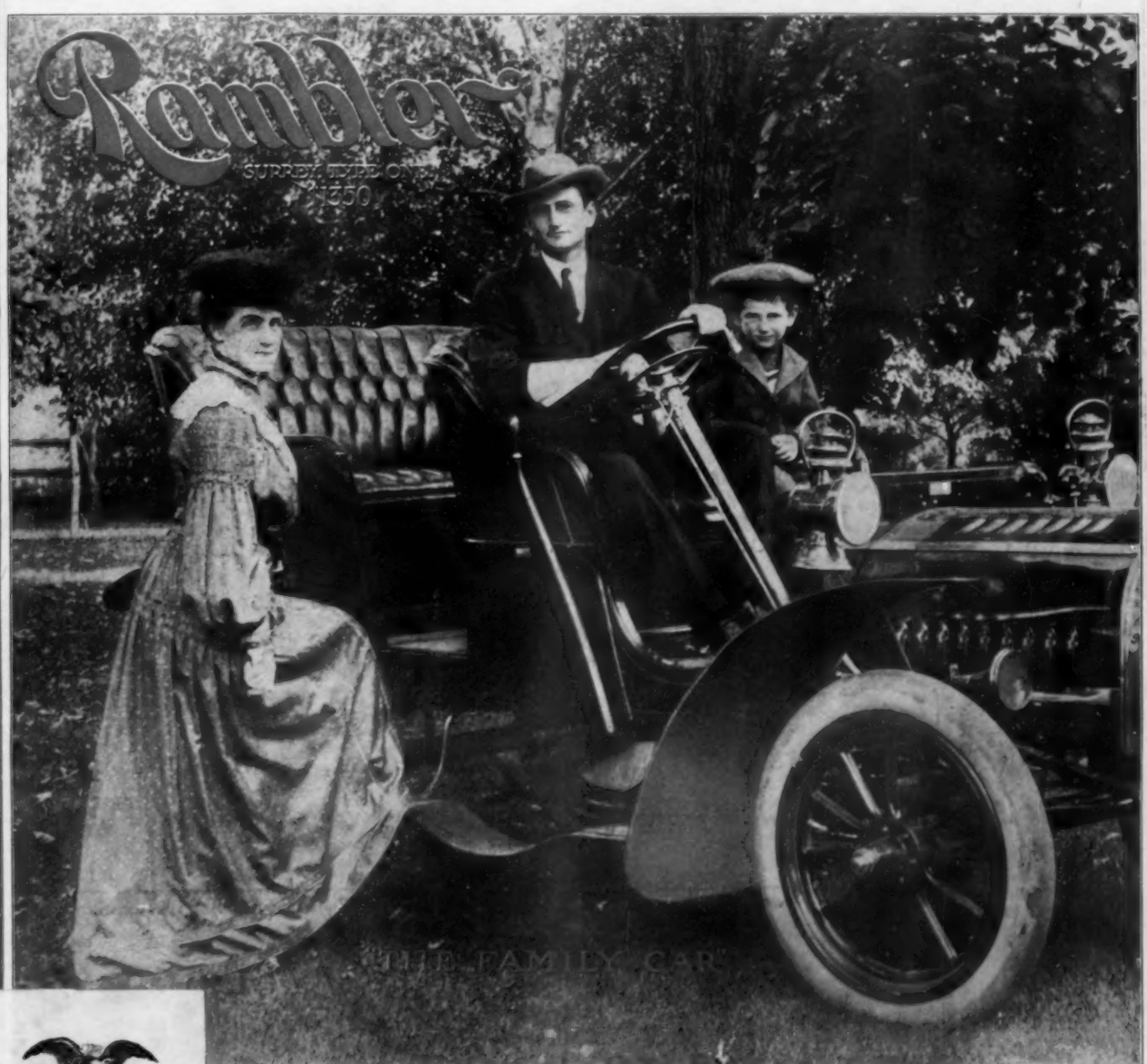

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THE AUTOMOBILE

VOL. XII. NEW YORK—SATURDAY, FEBRUARY 18, 1905—CHICAGO NO. 7

HAVANA—SAN CRISTOBAL RACES IN CUBA.

Special Correspondence.

HAVANA, Feb. 12.—A Cuban driver, handling a car owned by a Cuban, won the Cuban 100-mile road race to-day in 1 hour 50 minutes 53 3-5 seconds, winning the Havana Municipal Cup valued at $1,000. The car was E. J. Conill's 60-horsepower Mercedes, driven by Ernest Carricaburn, and ran splendidly throughout the contest. The average speed for the full distance, which was two-thirds of a mile short of 100 miles, was slightly less than 54 miles an hour.

TRACY A CLOSE SECOND.

Second place was taken by Joseph Tracy, driving the 30-horsepower Renault formerly owned by W. Gould Brokaw, but now the property of Major C. J. S. Miller, of New York City. Tracy would probably have won if he had had no trouble with his car, for his time of 1:52:26 was only 1 minute 32 2-5 seconds slower than that of the winner. Louis Marx's 40-horsepower Mercedes, driven by Joseph Birk, was third in 2:34:28, and R. G. Mendoza's 35-horsepower De Dietrich, driven by H. A. Robinson, was fourth in 2:40:17. H. W. Fletcher, in O. F. Thomas's 80-horsepower De Dietrich racer, failed to finish within the time limit owing to tire and other troubles.

The race was marked by a total absence

ROYAL PALMS THAT STAND LIKE HUGE SENTINELS ALONG THE COURSE OF THE 50-MILE HAVANA—SAN CRISTOBAL ROAD.

of injury either to spectators or participants, and of anything but minor mishaps to the cars. The winning car crossed the tape not only in a metaphorical blaze of glory, but also in a more material blaze of gasoline which had in some way overflowed and become ignited; but the fire was extinguished before any damage had been done.

THOMAS ACCIDENT ON FRIDAY.

Considerable betting was indulged in, and up to a couple of days before the contest the favorite was E. R. Thomas's 90-horsepower Mercedes, with Edward Hawley "up." An unfortunate accident, however, not only put the car out of commission, but seriously injured Hawley, and slightly injured Mr. Thomas. The young owner was driving his car over the course on Friday at fairly high speed. Approaching a stage, which had pulled to one side of the road, Thomas suddenly found the road unexpectedly blocked by another vehicle coming from the opposite direction. Seeing that it was too late to stop, the motorist avoided the stage and struck the carriage a glancing blow. His car veered off the road and ran up the bank on one side, and then down into the road again. Hawley was thrown out first, and Thomas, who acted with much presence of mind in endeavoring to get the machine straightened out on its course and brought to a stop, was thrown from his seat a few seconds later. The car ran along the road some yards further and swung around.

FLETCHER TO THE RESCUE.

H. W. Fletcher in the big De Dietrich racer was not far behind the Thomas car, and soon went to the rescue. He took Thomas in his car, and started back with him for Havana. Hawley was taken to the town of Guanajay, not far from the scene of the accident, and from there he was conveyed to the city in a special train. On the ride back to Havana Fletcher's car was forced into the ditch by an ox-cart, struck a rock, burst a tire, and swung completely around in the road. None of the occupants was hurt, but Mr. Thomas's nerves suffered severely from the shock of the second narrow escape. The remaining three miles to the city was safely traversed in Mr. Reubens's touring car. Mr. Thomas's car, when examined, was found to have the clutch thrown out, the brakes set, and the throttle closed, showing how promptly the automobilist must have acted in the face of danger.

HAWLEY SERIOUSLY INJURED.

Mr. Thomas's injuries consist of a deep and painful cut over one eye, and a severe shaking up. Hawley, however, fared worse, his spine and hip being injured and, it is feared, internal injuries having been sustained, in addition to severe bruises and lacerations. Fortunately no bones are broken. The attending physicians state that his chances for recovery are good.

Fletcher's car was repaired in time for today's race, but the low gears were so damaged that the high gear was used exclusively in the race.

PRESIDENT AND CABINET MEMBERS ATTEND.

The grand stands at Mariano, where the race was started, were occupied by crowds variously estimated at from 2,000 to 3,000 people, including President Palma, his cabinet, foreign ministers and the members of the families of the officials, who occupied central boxes. Crowds also gathered at various vantage points along the route, and greeted the racers with cheers. Ten-minute intervals elapsed between the starting of the five competitors, Tracy going first in the smooth-running Renault, followed by Fletcher in the huge De Dietrich, Birk in the Marx Mercedes, Carricaburn in Conill's Mercedes and H. A. Robinson in R. G. Mendoza's 35-horsepower De Dietrich. The De Dietrich racer had to be started by pushing, owing to the damaged gears, and for this reason was protested by Major Miller. It was not necessary, however, to act on the protest, as the car was not in the running on account of minor mishaps.

TRACY MAKES BEST OUTWARD RUN.

The run to San Cristobal, where the turn was made in a neutralized control, was made by Tracy in 51 minutes 22 3-5 seconds, the fastest time; the other four entering the control in the order in which they started. On the return trip, which was made over the same road, the light Renault showed the effect of the terrific pace. First the battery box shook loose, and for eight or ten miles was held in place by Tracy's mechanician. Finally a stop had to be made to wire it on. Two miles from the finish a gasoline pipe gave way, and the driver lost further time in making a temporary repair. Altogether, about three minutes were lost during the four stops that were necessitated. When the Renault flew past the grandstand, however, it was thought to have won; but reports from along the course indicated that Carricaburn was driving the big Mercedes "all out" and making fact time, with no exasperating roadside stops; and after a period of tense waiting, the German machine whizzed through and finished a winner by 1 minute 32 2-5 seconds, the crowd shouting its approval and the band playing the Cuban national air.

A POPULAR VICTORY.

Carricaburn's victory is a very popular one with the Cubans, and his glory all the greater because this was his first race.

The big De Dietrich and the Renault were the only strictly racing cars in the event, the others being stripped touring cars.

The progress of the race was telephoned to the grandstand from posts along the course, and announcements were made to the spectators in English and Spanish.

Tracy became the favorite in the betting when it was announced that he had made the best time on the outward run, though the racing De Dietrich had been the first choice up to the start.

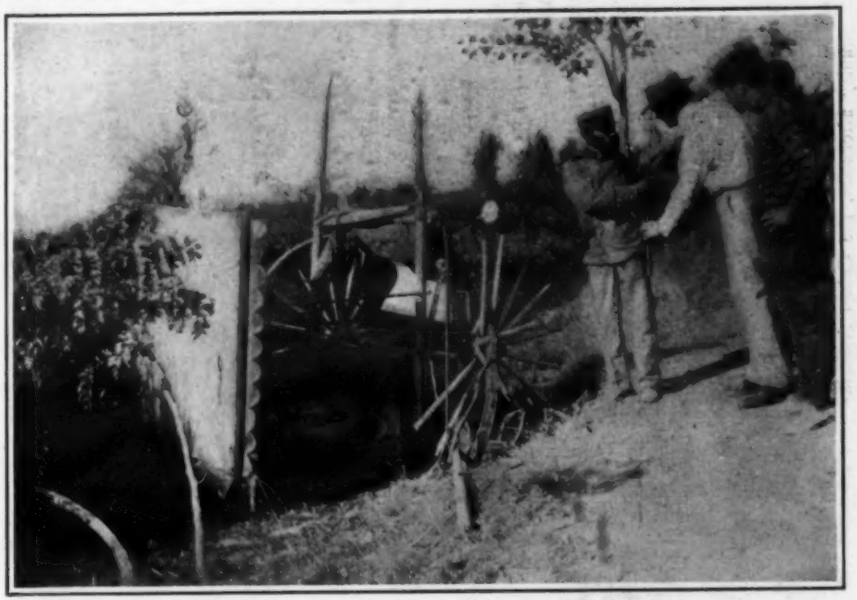
The road was in fine condition throughout, the only objection being the fact that it is rather narrow. The arrangements for policing were excellent and the course was kept entirely clear.

H. G. SQUIRES, AMERICAN MINISTER TO CUBA, AND DAUGHTERS HELEN AND GEORGIA.

Mile Road Record Broken.

Special Telegram.

HAVANA, Feb. 14.—H. W. Fletcher, driving O. F. Thomas' De Dietrich racer, today broke the world's record for one mile on the road by one second, making the distance in 45 seconds flat. Tracy, in Major Miller's 30-horsepower Renault, fell short of the record for middleweight cars by only three-fifths of a second.



Explaining to the Rural Guard How the Carriage Was Overturned.

Thomas's Damaged Car Towed to Headquarters of Rural Guard After the Accident.

Regular Cuban Automobile Stage Passing one of the Spanish Block Houses.

Where Hawley Was Thrown by the Collision and Picked Up by His Friends.

SCENE OF AND INCIDENTS CONNECTED WITH THE E. R. THOMAS ACCIDENT ON THE HAVANA-SAN CRISTOBAL ROAD, CUBA, THAT RESULTED IN HAWLEY'S SERIOUS INJURY.

Comparatively slow work was done in the kilometer trials, the best Fletcher could do being 28 3-5 seconds, seven seconds short of the record. Tracy's car became disabled in making a start in this event and could not be used again, leaving Fletcher to try alone.

For the first time, American records for five, ten and twenty kilometers were made, the three events being combined in one owing to the approach of darkness. The contestants were Fletcher in the De Dietrich and R. G. Mendoza in a 35-horsepower touring car. Fletcher's time for the three distances were: Five kilometers, 3:04 1-5; ten kilometers, 5:57; twenty kilometers, 11:18 1-5. Mendoza's time for the whole distance was 21:13.

Reveling in Cuban Scenery and Hospitality.

Special Correspondence.

HAVANA, CUBA, Feb. 9.—The American visitors left Miami last Sunday morning, arriving at Key West about midnight. They hunted around for the Cuban Consul, and the holding up of the steamer for two hours while that functionary was being interviewed in regard to Consular invoices which he did not seem to know anything about, resulted in the refusal by W. J. Morgan to pay a matter of about $300 for the consular services in making out a few sheets of typewritten stuff, and at last giving the captain the word "go," without the papers, much to the captain's relief. All this, it seems, could have been avoided, if the Cuban Association had not cabled to get such invoices at the port of entry. Export certificates for each machine—ten of them, including touring cars—had been secured at Miami, but when we arrived at Havana on Monday afternoon, the Cuban Association arranged things so quickly that, acting on previous understanding, the *Martinque* went up to the dock, and in less than sixty minutes all the machines were ashore. This was the first time in years that a vessel had been allowed to touch the dock, as all goods and passengers are taken off the steamers in tenders, owing to quarantine regulations.

Consternation Among the Natives.

When the big machines landed, and the several drivers started up the racers, there was a wild scattering of Cubans and mules, which made the funniest picture imaginable, the mules braying at the top of their voices, and the Cubans chattering like a lot of magpies. The passengers that had been seasick, and there was a goodly percentage of them, rushed for the various "Fondas," where they consumed great quantities of solids and liquids of various sorts, much to the danger of their stomachs.

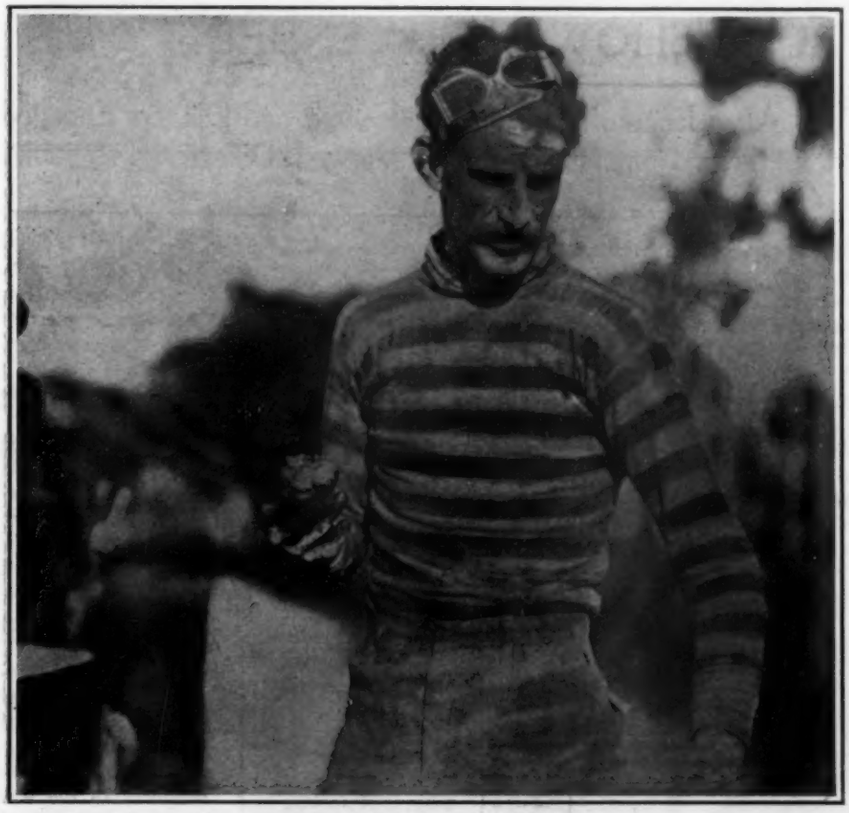
The day following, the visiting newspaper men and the local reporters were taken over the course in two 12-horsepower canopy top Duryeas, seating six people each, and a fine ride it was, too. Leaving Havana at 11 o'clock, a stop was made at Guanajay for lunch, the representative of the Duryea company doing the honors. There were two rather stiff grades on the course, which the Cubans said no ordinary machine could take at high speed with six people aboard, but the two little Reading machines made them with a rush on high speed. Among the party were Major C. J. S. Miller, in a Columbia touring car, Mr. and Mrs. Rollin White and Mr. and Mrs. Paul Deming, in White steamers, having as guests Augustus Post and others, and E. R. Thomas in his touring car.

Natural Beauties of the Course.

The picturesqueness of the country through which the visitors passed elicited frequent exclamations of admiration from all. The Cubans are just now busily engaged cutting their tobacco plants, and industriously turning up the soil with oxen and primitive looking plows. Beautiful banana and pineapple plantations lined the road, which all declared to be the finest stretch of country road they had seen. Its narrowness is its only drawback; the average width is not more than twenty-five feet, and at times the good going is not twenty feet wide. Rows of giant royal palms, with their symmetrical smooth trunks, lined the course like sentinels in different places. These trees are from fifty to seventy-five feet in height and the trunks are so perfect that they look like a piece of steel shafting, turned by a lathe. The extreme top is crowned by ostrich-like plumes, and the similarity and symmetry of their growth is the wonder of all visitors.

After leaving Guanajay the road still improves, and a delightful ride was had as we neared San Cristobal, the end of the course, fifty miles from Havana. Just before entering Guanajay, our driver stopped to get a drink of water at a house about six miles from our luncheon place. He was told that one of the occupants of the house, a young Cuban, had just died, so we made room for a brother, who went with us to Guanajay for the undertaker, as twenty-four hours is as long as a body can be kept above the soil here.

EDWARD E. HAWLEY, AT WHEEL OF E. R. THOMAS'S MERCEDES, IN WHICH HE WAS SERIOUSLY INJURED NEAR GUANAJAY, CUBA, FEBRUARY 11.



H. W. FLETCHER, WHO ESTABLISHED MILE ROAD RECORD OF 45 SECONDS ON TUESDAY.

There was a glorious sunset just as we reached the end of the course, for we had tarried frequently by the wayside. Soon we arrived at the famous old town of San Cristobal, whose church is one of the interesting landmarks in Cuba. Mounting to the church observation tower, away to the west was seen the Carribean Sea, whose waters glimmered like molten gold under the influence of the setting sun, and the shimmer seemed to spread the reflection which made the entire scene one of the most magnificent spectacles that a traveler can witness.

After replenishing our gasoline tanks and taking on some water, a rush was made to the principal *fonda* or restaurant, where we found a native beer which was properly called tropical, as it was quite warm, the ice man not having been around that day. Wonder of wonders, we also found some Glasgow ale. The proprietor talked very good English. When the hungry visitors finished there was not much left in that *fonda*.

The return trip found us at Guanajay about 9 o'clock. Here another stop was made to await one of the cars that had had some trouble. Finally, a start was made about 9.30, the entire party before leaving singing "The Good Old Summer Time," which the natives enjoyed so much that they called for a speech, so Fletcher, the De Dietrich driver, thanked the audience and the Cubans shouted "Bravo, Americano."

About midnight the entire party arrived in Havana just in time to prevent a searching party starting out for them.

The Hon Horatio Reubens, who acts as financial intermediary between the United States and Cuban governments, tendered a breakfast Wednesday to the newspaper men at his magnificent estate at Mariel, thirty-five miles from Havana. The party was taken out in Mr. Reubens' White steamer and a Duryea car and had "the time of their lives."

Mr. Reubens, who will deliver the oration at the unveiling of the Jose Marti monument here on February 18, is a Columbia graduate and a pronounced favorite of President Palma. The newspaper men returned to Havana at 8 p. m., having spent the entire day at Muriel.

Final Arrangements for the Races.

Last night there was a meeting of the Cuban Association, the competitors and visitors and the final arrangements were made for the 100-mile race on Sunday and the short races on Tuesday; the Cubans would not hold races on Monday because it was the 13th. Six cars were entered to start, as follows: E. R. Thomas' 90 Mercedes, Mr. Thomas to drive; O. F. Thomas' 80 De Dietrich, H. W. Fletcher, driver; C. J. S. Miller's 30 Renault, formerly owned by W. Gould Brokaw, Joseph Tracy, driver; E. J. Conill's 60-horsepower touring Mercedes, E. G. Mendoza's 35 De Dietrich, and Louis Marx's 40 Mercedes, drivers not yet selected. The races are to start at 12 o'clock sharp, at Arroyo Arenas, about ten miles from Havana, where a large grandstand has been erected and to which point a trolley line runs. The drivers will be sent away according to receipt of their entry, E. R. Thomas leading, Tracy second, and Fletcher third, at ten-minute intervals.

The Cuban government has issued strict instructions to all towns and hamlets to keep the road clear. A penalty of $10 will be the punishment if any stray animal be allowed near the course, and the rural guards have been given positive instructions to shoot any animal that wanders on the course.

Indications of a Good Beginning.

The International Automobile Racing Association of Cuba is doing its best to make this first automobile meet a success, and it will probably be a success, although the entries are far below what was expected. It should be remembered, however, that Ormond started with only two cars and one motorcycle, and that was only three years ago. The association acknowledges that it depends upon the visitors for instruction to a large extent, but its members also have some ideas of their own, which will go towards making up a first class meet in a managerial way.

In looking over the arrivals for January at this port, it is seen that the United States sent nearly 4,000 people here, most of them visitors to be sure, but nevertheless visitors that are liable to become at least winter residents. The total arrivals were about 6,000, so it is easily seen that the Americans will soon predominate in a land justly called the Pearl of the Antilles.

Havana is one of the cleanest cities that the visitor has ever seen, and the supply of drinking water is unequalled in any part of the world, two requisites for good health. They will soon have a perfect sewage system here, and then the dread fever will have no material in which to propagate.

An Efficient Engine.

Special Correspondence.

Paris, Feb. 3.—Among the engines exhibited at the Automobile Salon here was the Hurtu engine, which showed some exceptional qualities. The engine has interchangeable mechanically operated valves, with magneto make-and-break ignition as a basis and jump spark as an auxiliary. The carbureter is of the self-adjusting type, with automatic extra air inlet valve and throttle governor. It has four vertical cylinders of the usual type with bore of 85 millimeters (3 35-100 inches), and a stroke of 120 millimeters (4 75-100 inches).

An official test of this engine was made on a Panhard dynamo-electric brake, and at a constant speed of 1,260 r.p.m. the engine showed a steady power of 16.04 horsepower. The gasoline consumption was the lowest officially recorded so far—345 grammes per horsepower hour—the gasoline supplied being the Stelline brand, 700 degrees gravity.

CHICAGO'S BUSY SHOW WEEK ENDED.

Society a Prominent Element in Total Attendance of 122,421—Meetings and Dinners Engaged Club Men and Makers Every Day—Commercial Results Viewed Differently.

Special Correspondence.

CHICAGO, Feb. 13.—Society was out in force at the Chicago Automobile Show, which closed Saturday night, after a week's success. And the show responded well. From the first hour that the doors of the Coliseum were opened, until the managers packed up the gate receipts and ordered the lights turned out, there was never a time that the visitors did not have some one planning to entertain them.

The Chicago show was a success socially. It may have been purely a local exhibition; perhaps the throngs that packed the aisles from morning to night were entitled to the title of "rubberneck"; possibly the sales were largely magnified; it is even possible that the visitors came from Chicago and within a radius of not more than 300 miles. All these things may be true, it is said that they are, but nevertheless it must be admitted by all that the show was socially successful.

There were dinners and luncheons, breakfasts and pink teas. There were vaudeville performances and sacred concerts. There were receptions at bankers' homes. All the time there was "something doing." The keys for the doors of the Chicago Automobile Club were lost in the rush of the Friday before the show opened, and never were found. New ones may be ordered this week.

STARTING FROM COLISEUM IN SNOWSTORM FOR DEMONSTRATION RIDE IN THE ELMORE.

While the opening night was celebrated by a large attendance, the show was officially opened Tuesday evening, when Mayor Harrison, with a large number of his aldermen, headed by Ald. John E. Scully, were the guests of the management. It was advertised as "City Night" at the Coliseum. All the city fathers, with the Mayor, were called for with automobiles, and later in the evening were safely conducted to their residences. To many of them the display in the Coliseum was a surprise.

The automobile clubhouse was the scene of many of the dinners and luncheons. The week's entertainment commenced with a "smoker" Friday evening, followed by a "smoker" and vaudeville performance Saturday night. Sunday evening the members were at home to the visitors, who enjoyed a concert program.

Charles A. Coey gave a dinner Monday evening to twenty-five members of the E. R. Thomas Motor Company. President John Farson, of the Chicago Automobile Club, was host at a number of dinners and luncheons given during the week, in honor of the officers of the National Association of Automobile Manufacturers, of the delegates to the meeting of Illinois automobile clubs, and to the speakers and delegates in attendance at the meeting of the American Motor League. Friday evening John E. Fry gave a "smoker" at the clubhouse. Saturday evening Samuel A. Miles, general manager of the show, gave a dinner for his assistants.

One of the largest social events of the week was the dinner given Friday evening by the Automobile Club in its clubhouse. More than 200 guests were present. It was known as the "Get Together Dinner." Isaac B. Potter, president of the American Motor League, was the toastmaster. The relation of good roads to the automobile was one of the principal subjects that were discussed.

Society at the Coliseum left its trail in the lines of cards announcing the sale of cars to many whose names appear in the Social Register and the Blue Book. A large number of sales were made to Chicagoans who had the opportunity of seeing all cars together, and of making their purchase accordingly. Except in the seats of the machines on display, and in a row of benches in the gallery, there was no place for the visitors to rest. And perhaps more than one order was placed because the guest of the exhibitor found the cushion most comfortable.

The attendance for the week may indicate the interest that was taken in the exposition. According to the management, 122,421 persons visited the show during the week, more than 20,000 in excess of the number who passed the gates in Madison Square Garden. The attendance for the week by days was: Saturday 11,230, Monday 15,010, Tuesday 15,982, Wednesday 18,047, Thursday 21,503, Friday, 20,649, Saturday (estimated), 20,000. This is an increase of 40 per cent. over the attendance last year.

Windsor T. White, president of the National Association of Automobile Manufacturers, under whose auspices the show was held, was enthusiastic over the results. "This is the most successful exhibition of automobiles ever held in this country, and perhaps in any country," said Mr. White. "Automobiles have been the one thing that has been talked about the hotels, clubs and restaurants during the week. I predict a wonderfully successful year for the dealers in this part of the country."

Different Views of the Show's Commercial Side.

Special Correspondence.

CHICAGO, Feb. 13.—Considered from a commercial standpoint, the Chicago show was a magnificent success, according to the management. Viewed from that same point by the exhibitor and the visitor, the verdict would be different. It was a local show. The buyer of parts never came. In the galleries the spaces reserved for the manufacturer of accessories never were crowded. A small proportion of the visitors on the main floor wandered into the gallery, but they most often passed the exhibits without stopping. About a brilliant light display a few

PRACTICAL DEMONSTRATION OF USEFULNESS OF GLASS SCREEN ON FORD CAR

would pause. Some of the tire men had audiences; but the crowds remained on the first floor.

"We might as well be miles away on the West Side as up in this gallery," said one of the exhibitors. "Once in a while a tired man or woman comes up and sits on a bench in front of this space, and then he goes and his place is taken by another, but they do not come up here to buy in hundred lots."

On the first floor there was another complaint. "They come in and ask how much this machine is and expect us to tell them all about it, and show them how to operate the engine and they couldn't or wouldn't buy in a hundred years," said the exhibitor. "I never saw such a crowd of 'rubbernecks.'"

And then there was a different complaint from another source, the visitor. "Unless you carry your check book sticking out of your pocket, you had better refrain from asking anything about their machine," he declared. "Every machine is filled up with friends of the demonstrator and really they don't want to be bothered."

Then the show officials spoke. "The exhibitors have sold cars in Russia and in Japan," they announced. "The sales will run into millions of dollars. Everywhere the demand has been wonderful, past belief. Many manufacturers will have all they can do to fill the orders that have been booked during the week."

Automobiles were sold to many buyers. Hundreds of individual machines were sold. The builder, however, did not buy in such quantities that his presence was noticeable. It was the sale from manufacturer or agent to user.

There were a number of sales that were interesting. Nicholas Summerfield, of Moscow, a representative of the Russian government, ordered six 8-horsepower Oldsmobile railroad inspection cars for immediate delivery. Rapid fire guns will be mounted on the platforms and they will take the place of the old-style car. Mr. Summerfield and M. Zemlesczka, his companion, gave the order. G. S. Buck, of the Oldsmobile company, said:

"We do not know officially that these cars are to be used as gun carriages. We simply know that track cars have been ordered to meet certain specifications and for quick delivery. The way the cars are to be built will make them easily adaptable for service with two guns on each car,"

It was said that a number of the cars purchased were for use in the southwest, where ranchmen will undertake trips of seventy-five and one hundred miles. The Studebaker company reported a number of sales of trucks and other commercial cars.

An estimate of the business of the week compiled by the agents of the management showed a sale of a total of 5,359 cars, representing a total value of $7,660,400. In addition to this, the estimate of the management was that there had been a sale of parts to the value of $500,000. It is tabulated as follows:

	Cars sold.	Value.	1905 output.
Knox	65	$130,000	800
Apperson	20	80,000	150
Haynes-Apperson	28	60,000	300
Rambler	500	675,000	3,000
Studebaker	15	40,000	300
Locomobile	40	140,000	1,450
Thomas	64	211,200	400
Peerless	62	248,000	500
Oldsmobile	2,500	2,125,000	6,000
Columbia	65	201,200	2,500
Pope-Toledo	200	750,000	1,000
Pope-Hartford / Pope-Tribune	50	100,000	1,000
Pope-Waverley	75	140,000	900
Royal Tourist	85	255,000	400
White	100	250,000	1,000
Ford	650	975,000	3,000
Franklin	140	280,000	1,600
Total	4,569	$6,660,400	24,300
Sales by other dealers, est.	700	1,000,000	.....
Sales of parts, estimated	.....	500,000	.....
Total business	5,359	$8,160,400	.....

Features of Some New Western Cars.

Staff Correspondence.

CHICAGO, Feb. 11.—A number of western cars by builders who made their first show appearance at the Coliseum this year are described in the following pages, the limited time at command having prevented a critical inspection of the exhibits in time for last week's issue of the paper. The number of builders in this Middle Western territory is increasing, and it is gratifying to note that their products, in the main, are not so much on the "freak" order as in the earlier experimental days of the industry in the West.

Banker Assembled Car.

Among the new cars in which free use of standard component parts has been made is the Banker, shown in public for the first time by the A. C. Banker Co., of Chicago. It is a car that makes a good first impression that is increased by closer inspection of

STARTING HOMEWARD FROM THE SHOW ON A WABASH AVENUE CABLE CAR.

the construction, which is singularly free from complication and is strong and workmanlike. It is a full sized touring car with four-cylinder vertical motor 4 1-4 inch by 5 inch, and rated at 25-30 horsepower. The body is of the modern double-phaeton type, with side-entrance, doors opening to the front and long running boards on the sides.

The motor is a standard commercial type, following Renault lines, and with cylinders cast in pairs. All the valves are mechanically actuated, interchangeable and fitted on one side, with, of course, a single cam shaft. The transmission system includes an expanding metal-to-metal clutch, running in oil, a sliding change-speed gear and propeller shaft drive to rear axle differential. Both front and rear axles are of steel tubing with ball bearings and usual artillery wood wheels, 32 inch by 4 inch.

A pressed steel frame of standard construction carries the semi-elliptic springs at front and back, and also a channel steel sub-frame on which the driving mechanism is secured.

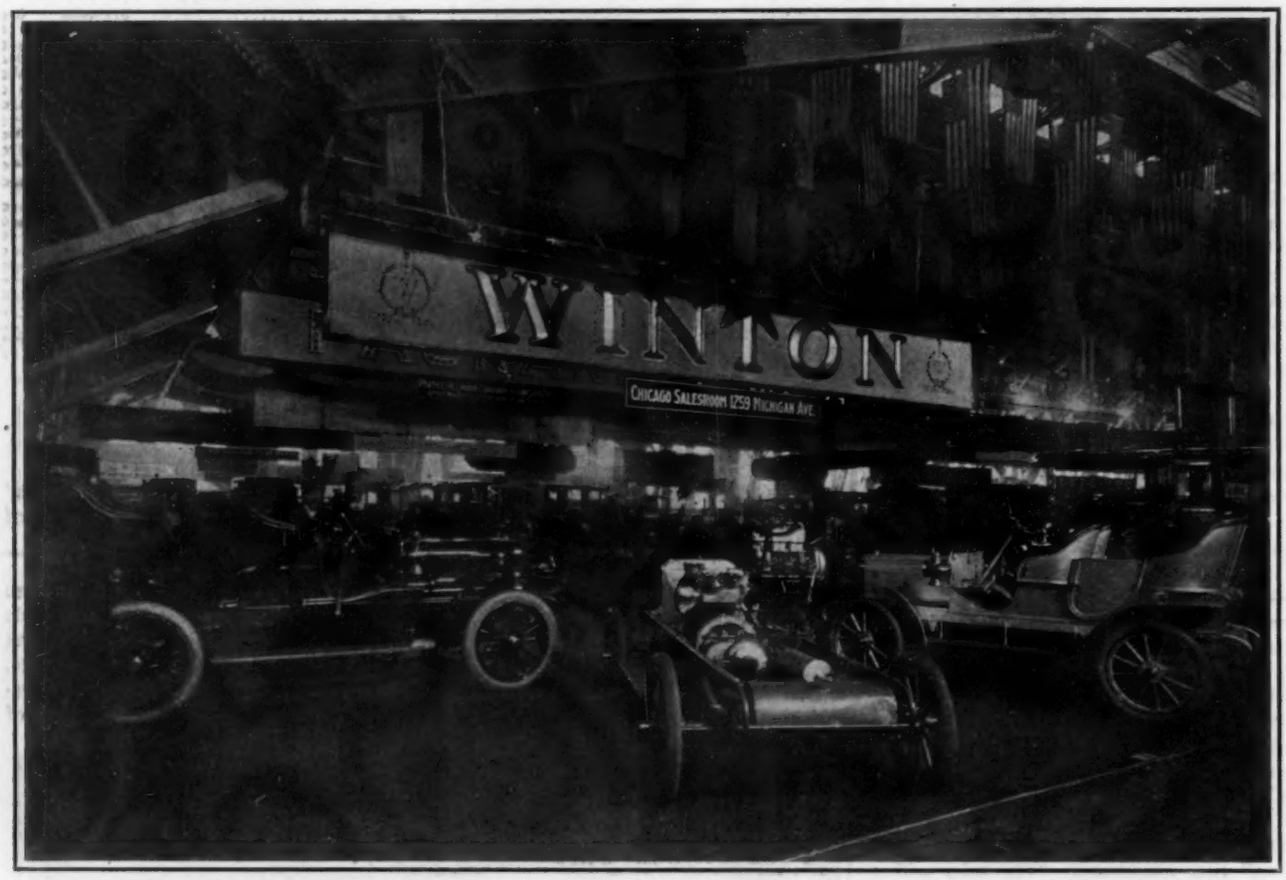
Lubrication is by splash and a force feed oiler is employed. Ignition is by jump spark, with separate coil for each cylinder energized by a storage battery, with timer placed in the vertical position at the rear of the motor, as is now so generally adopted. An automatic carbureter with diaphragm-controller supplementary air valve modeled on the Krebs, is said by the builder to give great flexibility to the motor. The bonnet has straight sides reaching up to a pointed arch, and in front a cellular cooler.

Control is designed on modern French lines, with side levers for change speed and rear wheel brake, spark and throttle on top of wheel, and clutch and brake pedals. A simple arrangement of the connections gives an interlocking system by which the setting of either hand or foot brake releases the clutch and also prevents gear shifting when the clutch is engaged.

Steering is, of course, by wheel and with worm and sector, irreversible, and with ball and socket joints and buffer springs.

It will be seen, therefore, that the construction follows established lines, commendably free from freaks and cranky notions embodied in metal, which frequently mar a first production.

The body has good lines with divided front seat and gently raking backs. Wheelbase is 100 inches and tread 56 inches. Ready for service, the weight is 2,000 pounds. With wood body the price is certainly low.

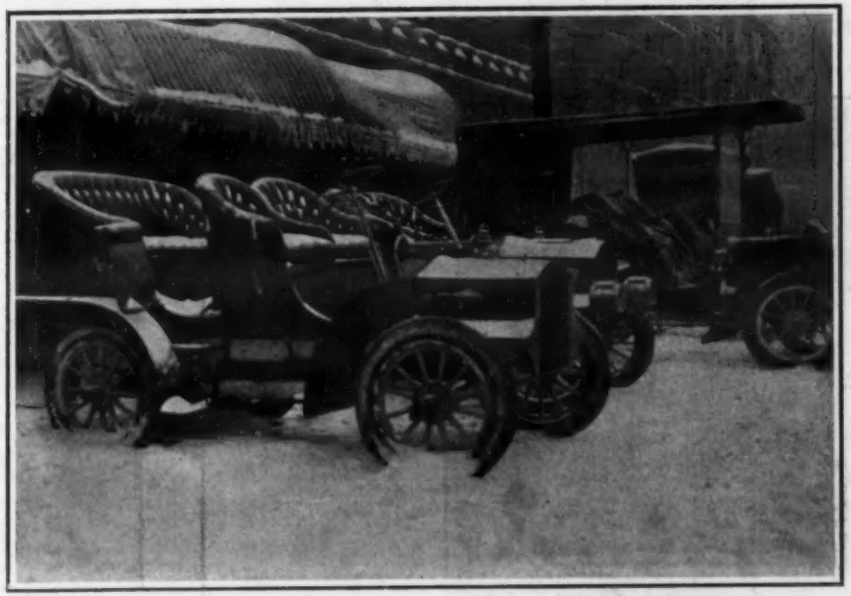


WINTON EXHIBIT ON THE MAIN FLOOR — CHASSIS COMPLETE SIDE-ENTRANCE CARS AND VERTICAL ENGINE DISPLAYED.

Mahoning's First Appearance.

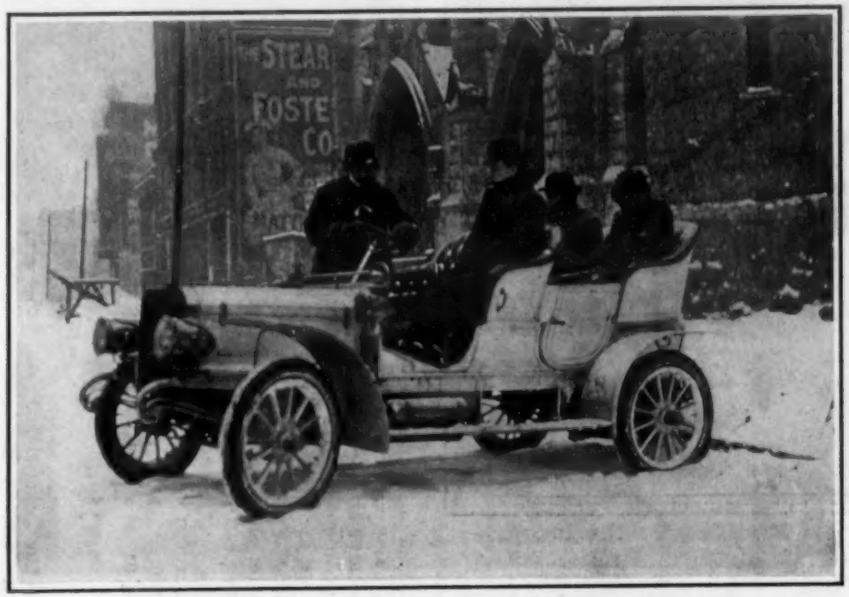
An automobile builder that has approached the problem with a long experience in horsedrawn vehicle construction, is the Mahoning Motor Car Co., of Youngstown, O., which makes a maiden appearance with a car of distinctly American type. This is a light touring car with double phaeton body, carried on a self-contained chassis with a powerful single-cylinder, air-cooled motor under the body, driving to the rear axle by single chain through a planetary gear. The importance of a suitable running gear has, naturally not been undervalued by the constructors, with long experience in the carriage trade. The spring system includes semi-elliptics in front, carried under the pressed steel frame and full elliptics in the rear, carried outside the frame, and attached at the top to the outward projections of the rear cross member of the frame. The side members of the frame extend rearwardly beyond the cross member, forming a stable platform on which the rear end of the body rests.

At first glance the car looks like a motor-in-front construction, for the forward end is occupied by a neat square bonnet with close grating in the open end resembling a cellular cooler. This hood covers the tanks, however, which are conveniently placed under the lid. The motor is placed on the left side, about under the front seat, the cylinder pointing forward and under the footboard. Instead of cast flanges, the cooling surface of the motor is built up in an original way. A copper wire of 3-32-inch square section is formed into a coiled band of any desired length, by special machinery, which is wound around the cylinder as illustrated and described in The Automobile

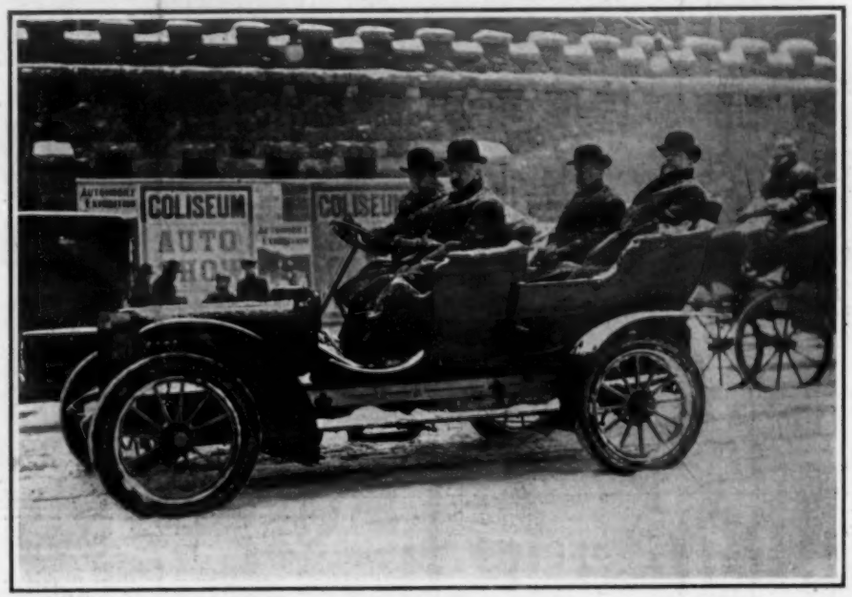


A Pair of Snow Cooled Cars Waiting Invitingly for Passengers at Coliseum Entrance

Starting with a Full Load in the Pope-Toledo through the Deep Snow.



"All Aboard" in the New Winton for an Airy Drive Down Michigan Avenue.



Wayne Touring Car and Passengers Picturesquely Sifted with the "Beautiful."

"COLD COMFORT" WITH THE DEMONSTRATION CARS IN FRONT OF THE COLISEUM DURING THE CHICAGO SHOW LAST WEEK — PHOTOGRAPHED DURING HEAVY SNOW STORM.

of December 24, 1904. This covering stands out 1 1-8 inches from the cylinder and gives 19 1-2 square inches of radiating surface to each square inch of cylinder wall. An auxiliary exhaust port is connected to the exhaust pipe.

The face of the flywheel is of unequal diameters, the step being beveled, and against this bears a leather friction roller keyed on the rear end of the fan shaft. This shaft is free to slide longitudinally in its bearings, a coil spring at the forward end holding the friction roller on the shaft in engagement with the flywheel. The mechanism is so adjusted that when the engine speeds up beyond the designed fan speed, the air pressure on the fan blades causes its shaft to slide in its bearings sufficiently to break the contact of the friction roller with the flywheel rim. As the fan slows down the shaft moves back and friction contact is again established. This is reported by the builders to have worked very effectively during prolonged tests.

The motor is rated at 9 1-2 horsepower. It is carried on cross members of the main frame, and in fact, all the mechanism is quite independent of the body. The valves are mechanically operated and both inlet and exhaust are 2 inches in diameter.

A spur gear planetary transmission giving two speeds and reverse is connected by single roller chain to the spur gear differential. Jump spark ignition is used, the position of the cylinder necessitating very short wires.

The methods of control follow modern practice and also the lubrication and braking systems. The wheel base is 80 inches, tread 56 inches, wheels 28 by 3 1-2 inches, and the weight 1,300 pounds.

On the same chassis a doctor's stanhope or a delivery wagon body can be fitted. The car has been subjected to extensive road tests in the territory lying between Cleveland and Pittsburg.

Hammer Double Phaeton Car.

An outgrowth of the Hammer-Sommer car, exhibited last year, is the Hammer, built in Detroit by the Hammer Motor Co., and now shown for the first time. This is a regular double phaeton, side-entrance touring car, of 24 horsepower, with four-cylinder motor in front, two speeds and reverse planetary transmission and shaft drive.

A peculiarity of the motor construction is that all the cylinders are cast in one piece and surrounded by a rectangular or box-shaped water jacket of aluminum. This is piped to a front cellular cooler with a direct driven gear circulating pump in the system.

In general design the car follows modern practice, including steel frame, semi-elliptic springs, Mors shaped bonnet, automatic lubrication, jump spark ignition, a specially designed carbureter to give constant mixture, spur gear differential and a five disk, iron and fiber, high-speed clutch. On top of the steering wheel a single lever gives throttle and spark control and a single side lever regulates the gear speed changes. Wheelbase is 98 inches, tread 56 inches, and weight is listed at 1,750 pounds.

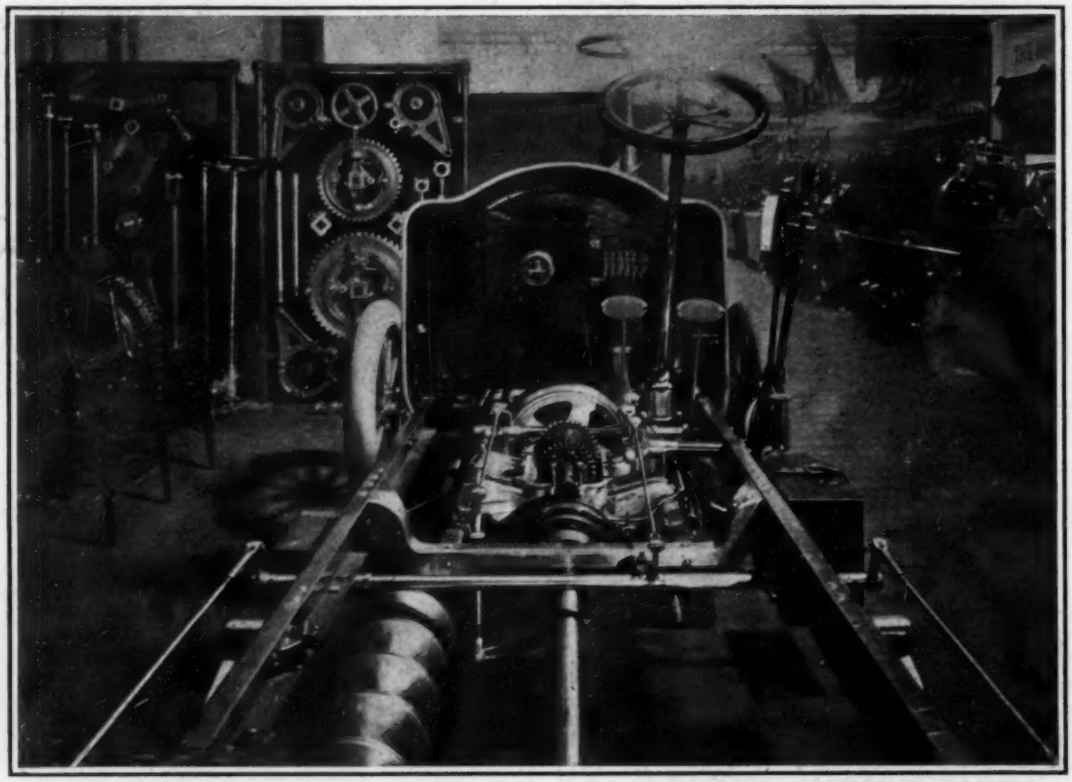
Monarch Light Runabout.

A car of the buggy type is shown by the Monarch Automobile Co., of Chicago, and listed at $500. The body is a regular piano box buggy, with folding top. This is mounted on two side springs, reaching the entire length of the under body to which they are fastened at the ends. These springs are flattened in the center and are laid on a longer set of side springs, which connect the back and front axles, giving a compound spring suspension of great flexibility.

An air-cooled motor is carried on a frame formed of tubes and angles laid across the lower set of springs, and is placed with the cylinder forward. Its cylinder is 4 1-2 inches by 5 3-4 inches, and is rated at 7 horsepower. The cooling flanges are not thin fins, but are quite heavy, giving the exterior a slotted appearance. Cooling is assisted by a fan geared to the flywheel. The valves are mechanically operated and the ignition is by jump spark.

Drive is through a two-speed planetary gear, by chain to the bevel gear differential on the rear live axle. Wood wheels, 28 inches by 2 1-2 inches are fitted with single tube or cushion tires. The wheel base is 68 inches and the tread 55 inches, and the running weight without live load is 900 pounds. Steering is by lever and is not irreversible.

Modest claims are made by the builders



CHASSIS ASSEMBLED FROM STANDARD COMPONENTS MADE BY THE FEDERAL MANUFACTURING COMPANY—SEPARATE PARTS SEEN IN LEFT BACKGROUND

for this vehicle, as they do not claim it is as speedy or of as great carrying capacity as a large touring car, and with considerate use it ought to meet the needs of those who want a runabout pure and simple for local use. It appeals, of course, more particularly to the western buggy owner.

Royal Electric Vehicles.

Many visitors passing the stand of the Royal Automobile Co., in the annex, were surprised to find a display of electric cars, as they associated the name with the high-powered touring car built in Cleveland, which was one of the competitors in the Vanderbilt Cup race, and which was on view in another part of the Coliseum, as it had been at the Garden Show. A closer examination showed, however, that the cars had nothing in common except a name and that the electric vehicle exhibit referred to was made by a new corporation of local origin, with factory and sales headquarters in Chicago.

A variety of electric carriages were shown, including runabouts, Royal victoria and stanhope. The runabout has a piano-box body, tubular reaches, transverse spring suspension in front and full elliptic in the rear. The motor of 3-4 horsepower, is hung on a rocker, directly under the seat and drives by center chain to the rear axle differential.

A special feature of construction of the larger carriages, which is covered by patents, is the hub motors on the rear wheels. The motors are enclosed in steel cases, the armature shaft of each having its inside bearing in the end of the steel axle and the outer end in the hub of the wheel. Power is transmitted by spur gears, through a double reduction to an internal gear on the road wheel. For inspection of the commutator and brushes there are two openings in the motor casing, with removable covers.

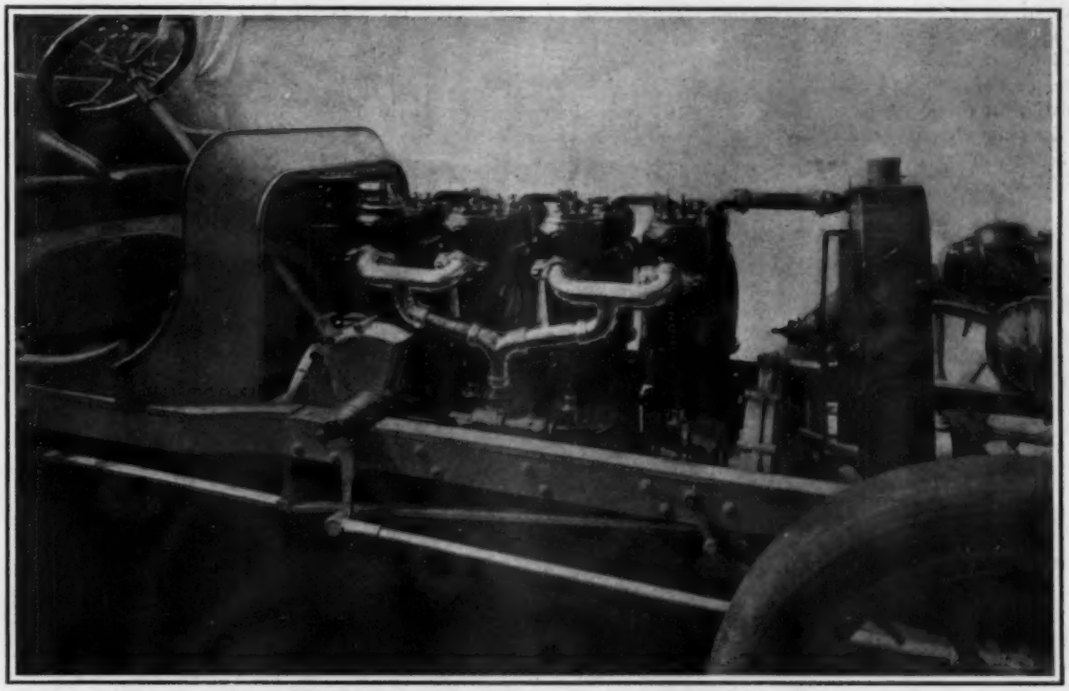
It is the announced intention of the company to build commercial vehicles with this hub drive on all four wheels.

In the catalogue given out at the stand, a gasoline car styled the Royal Princess, is described, but this is not on exhibition. This car is a double phaeton with two-cylinder horizontal opposed motor, under the body, of 16 rated horsepower, carried on an angle section frame. The car has a bonnet in front and canopy top with wind shield and follows accepted lines in its general construction.

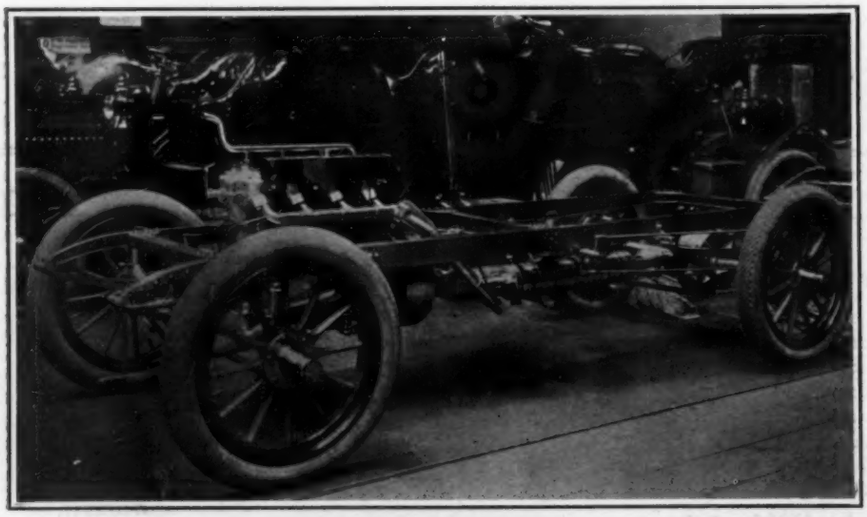
TOURING CAR BUILT BY A. C. BANKER COMPANY FROM STANDARD COMPONENTS.

Marble-Swift Friction Driven Tonneau.

As usual, the Marble-Swift Automobile Co., of Chicago, displays a car for public inspection at the local show. It is a rear-entrance tonneau, touring car of 18-22 horsepower. The well-known friction drive is retained with only minor changes of structural detail. In this system there are two friction driving wheels and two driven disks, the former mounted on one shaft on opposite sides of the fore and aft centers of the cast-iron driven disks and between their faces. The shaft carrying the friction driving wheel, has a movement angular to the faces of the driven disks so that opposite sides of the parallelogram of contact are engaged at the same time. Thus, by engaging one face or the other of the driving



MOTOR END OF THE CHICAGO-BUILT TINCHER SEMI-RACING CAR.
Note Separate Cylinders and Crank Cases, and Novel Dash and Steering Arrangement.



CHASSIS OF THE GEO. N. PIERCE TOURING CAR SHOWING NOVEL EXHAUST SYSTEM.

friction wheels, the disks can be made to revolve in either direction, and consequently the car moved forward or backward at will. Speed variations are made in the usual way by shifting the position of the points of contact in or out from the centers of the driven disks.

A water-cooled, four-cylinder motor of a regular standard market type, is used in connection with a Long cooler. Drive is by side chains and there is no differential, the friction drive answering the purpose of an equalizing gear. Wheel base is 90 inches, tread 54 inches, and weight 1,600 pounds.

Features of Displays by Well-Known Makers.

The feature of the exhibit of the Cadillac Automobile Co. has been the display of engines of both the single-cylinder runabout and the new four-cylinder touring car on stands with the sides of the cylinders cut away to show the action of the valves, the engines being run by electric motors. The engine of the touring car was shown in a half-section of the regular steel frame. The exhibit occupied a prominent position on the south side of the main aisle, and the new touring car appeared to be the center attraction. One of each of the regular models made by the firm was shown, the new touring runabout making its first appearance in the West.

"Green Dragon" Fresh from Ormond.

The *Green Dragon*, the racing car which in the hands of Barney Oldfield was so prominent during the last racing season, attracted considerable attention to the exhibit of the Peerless Motor Car Co. The racer was shown just as it arrived from Ormond, and every day the attendants were kept busy removing its peculiarly shaped hood to display its motor. The company showed a chassis of the new model, a touring car, and a limousine.

Fine Locomobile Exhibit.

A conspicuous feature of the exhibit of the Locomobile Co. of America was a pure white touring car of the 15-20 horsepower type, with a Cape hood. Other cars shown by this company were a limousine of 30-35 horsepower, a 40-horsepower car with special side-entrance body with convertible glass side, and a 40-horsepower side-entrance touring car. The chassis of the 15-20 horsepower car was also shown.

Studebaker Gasoline and Electric Cars.

The exhibit of the Studebaker Automobile Co. included types which were designed to meet almost every requirement of prospective purchasers. There were three electric runabouts, a doctor's electric Stanhope, two electric delivery wagons, a side-entrance touring car of the gasoline type, and a gasoline touring car with canopy top. The chassis of the gasoline car was also shown.

The convertible back on the Duryea runabout interested many whose ordinary requirement is for a single seater but who at times have need for more carrying capacity. The back of the car opens when desired and gives the vehicle a seating capacity of four persons. The Duryea Power Co. also exhibits its new ignition device.

The Model Gas Engine Works showed a touring car with side entrance and one with the body raised to show the firm's methods of getting at the motor of the vehicle.

Reo Company Congratulated.

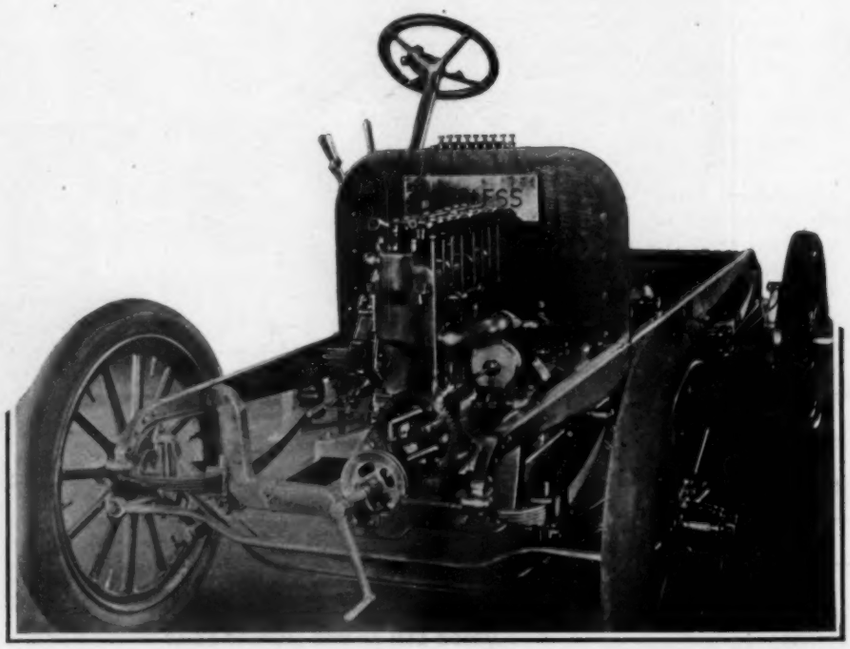
The Reo Motor Car Co., which exhibited its product in the West for the first time, was the recipient of many congratulations on the completeness of its display and the number of sales and agencies closed during the week. The company exhibited a chassis showing the simplicity of its construction, a touring car, and a runabout.

A Trio of Mitchells.

The little Mitchell runabout, shown by the Mitchell Motor Car Co., one of the few cars of its type in the Coliseum, proved a popular vehicle among the Westerners. This machine was exhibited together with a 20-horsepower touring car and a 3 1-2-horsepower motorbicycle.

Thomas Bulletin Board.

One of the first objects to strike the eye of the visitor in the exhibit of the E. R. Thomas Motor Co. was a long narrow bulletin board giving the names of the purchasers of the new 1905 model under the caption of "Bona Fide Orders for Bona Fide Cars." Among the cars shown were a limousine touring car with removable top and glass front, and a chassis. The exhibit was in the charge of C. A. Coey & Co., the Chicago agents.



FRONT END OF PEERLESS CHASSIS, SHOWING INTERESTING FEATURES OF CONSTRUCTION.

The Marion Air-Cooled Cars Care Not for Chicago's Wintry Blasts

"Doing a Turn" on the Avenue in the New Haynes-Apperson Surrey.

Holsman Animated Buggy — Rope Drive on Rear Wheels and No Differential.

Examining the "Works" After a Demonstration Ride in the Pope-Toledo Touring Car.

INTERESTING SIGHTS CAUGHT BY THE CAMERA MAN ON WABASH AVENUE IN FRONT OF THE COLISEUM WHILE THE SHOW WAS ON.

RESTFUL ROYAL BOOTH.

The Royal Motor Car Co. occupied three spaces on the center aisle, exhibiting, however, only two cars, so that there was unusual freedom from crowding and the spot was a sort of oasis. The standard Royal purple was used in a large sign with good effect.

The Exide Battery Co., of Philadelphia, occupied a portion of the stand of the Electric Vehicle Co. and exhibited sectioned cells together with separate plates and grids, showing the manner in which the complete cells are built up and the details of the various parts.

Two models of its 1905 14-horsepower car were shown by the Michigan Automobile Co., the motors in both being of the same type as in former years but improved in detail; while the considerably increased wheelbase added much to both the appearance and the riding qualities of the machines.

The Pierce Engine Co. exhibited two cars; a single-cylinder runabout of 8 horsepower and a side-entrance touring car with 16-horsepower double cylinder motor, both powerful looking machines and apparently well thought of by agents.

JACKETED AIR-COOLED ENGINE.

The Frayer-Miller car which attracted so much attention at the Madison Square Garden Show in New York was shown in Chicago also by the Oscar Lear Automobile Co. This car, which was fully described in THE AUTOMOBILE for December 24, 1904, has an entirely new system of cylinder cooling, the cylinders having sheet metal jackets with open bases, the tops of which communicate with an air duct leading from a centrifugal blower on the forward end of the motor shaft.

Another air-cooled car, but one which adheres more closely to conventional ideas of air-cooling, was the Marion, exhibited by the Marion Motor Car Co., and came in for a large share of attention from the advocates of air-cooling.

CHASSIS AND CARS FROM MISSOURI.

The chassis exhibited by the St. Louis Motor Carriage Co., with its low-hung motor, appealed to many on account of its appearance of stability and safety. In addition to the chassis, the company exhibited two of the regular models of its "rigs that run."

A side-entrance touring car and a tonneau car with rear entrance were shown by the C. H. Blomstrom Motor Co., makers of the Queen cars.

The Yale car for 1905 was represented by two models, one a 14-16-horsepower machine and the other 24-28 horsepower, shown by the Kirk Mfg. Co.

CARS FROM MICHIGAN AND INDIANA.

The manufacturers of the "Sturdy Northern" showed one of the regular Northern runabouts with side spring suspension, one of the new touring cars with double opposed motor with crosswise cylinders and shaft at an angle; and a chassis of the same, showing the substantial construction of the machine; the Reid Mfg. Co., of Detroit, one of the chainless Wolverine cars with 16-20-horsepower motor; the Buick Motor Car Co., a chassis and a complete car, and the Wayne Automobile Co., a chassis and three cars, the chassis being highly polished and presenting a fine appearance.

Component Parts and Accessories at Chicago.

Staff Correspondence.

CHICAGO, Feb. 11.—Component parts and accessories were extensively exhibited in the Coliseum Show which closes to-night. All of the gallery space and the upper floor in the annex or southern extension of the main hall were occupied with stands of original manufactures, western agents for specialties, and supply houses, the exhibits covering the entire range of articles from pressed steel frames, fresh from the dies, to fur coats for chauffeurs. Most of the exhibits were practically duplicates of those shown at Madison Square Garden, though naturally there were some novelties and a number of exhibitors who had not shown in New York.

At the Coliseum Show, as at the Garden, the parts and accessories exhibitors suffered from the location of their stands away from the exhibits of cars on the main floor, and doubtless hundreds of persons who visited the show and inspected the complete vehicles did not take the trouble to climb up to the higher levels. For this and other more important reasons there was comparatively little business transacted upstairs, and all along the line was heard much complaint about the financial benefits of the show. The limitations of space also not only prevented adequate display at many of the separate stands, but also compelled many showing small wares to take space in the larger stands, so that to a great extent their identity was lost in the greater display.

REAL ENGINEERING WORK ON PARTS.

Most important in point of size and variety of all the gallery exhibits of components were those of the Federal Manufacturing Co., of Elyria, Ohio, and the A. O. Smith Co., of Milwaukee. At the former there was an interesting collection of parts of the driving mechanism of commercial vehicles of the electric type, showing both engineering skill in design and construction. Of greater popular interest was a complete chassis built up of parts made and sold separately by the Federal company. It was of the regular motor-in-front touring type, with sliding gear transmission and propeller shaft driver. In design the motor recalled Decauville practice and the chassis showed an appreciation of the results reached abroad by years of trial and error guided by knowledge of fundamental engineering principles. In the exhibit of the Smith concern were included frames of various dimensions and usually of channel section and axles, hubs and the like. Among the axles was one of the modern I beam section finely made. Taken separately and together these exhibits were really among the most notable in the entire show, not simply as illustrations of actual parts ready for sale, but as an evidence that the parts problem is now receiving the serious engineering attention here that it has long enjoyed in France, a support to which much of the success of the foreign builder must be credited. The skill that comes from highly specialized effort when purchasable without heavy plant investment is certainly an opportunity especially for the small builder who knows how to employ it.

A MOTOR WORTH ATTENTION.

Under a change of name the Autocar Equipment Co., of Chicago, now styled the Continental Motor Manufacturing Co., again exhibited samples of its work in complete motors and transmissions. There is a suggestion of Renault construction in the four-cylinder vertical water-cooled engine. It has cylinders 4 by 4 inches by 4 3-4 inches, cast in pairs, with water-packets and valve chambers on one side cast integral. The tops of the cylinder castings are dome shape, and the valve chambers, which come up to a slightly lower lever, are flat, carrying the spark plugs and relief docks on hexagon headed brass covers. All valves are interchangeable and mechanically actuated by one cam-shaft, the pude rods having squared ends working in phosphor bronze sleeves. The crankshaft, of the three-bearing type, is of good dimensions with slabs of liberal cross section and champered corners. It is drop-forged of nickel steel. The trunk pistons are fitted with three grand rings at the top and oil grooves at the bottom end. An I section connecting rod is fitted with phosphor bronze bushing working on the gudgeon pin and large through bolted phosphor bronze bearings on the crankpin end. Two separate bridges hold the exhaust and inlet pipes on their seats on the side of the valve chambers. There is one inlet pipe for each pair of cylinders and two exhaust pipes. In accordance with modern practice the aluminum crank-case is divided below the shaft bearings and is fitted also with inspection plates on the cam-shaft side and on the bottom. All gears are enclosed and the timer is carried horizontally on a forward extension of the cam-shaft. At 1,000 revolutions the motor is guaranteed for 28-30 horsepower, and its weight is 300 pounds. The design is good and the mechanical construction stands close inspec-

tion favorably. An attractive feature about the exhibit and one indeed rare was the descriptive literature, especially of the motor. This has evidently been written by some one who knows the technical points to be developed and is singularly free from silly bombast and empirical claims.

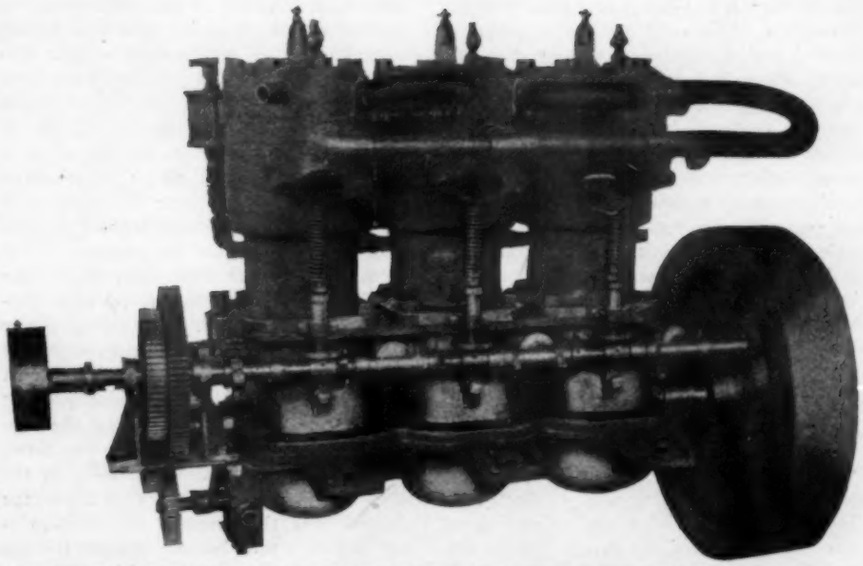
At the same stand a sliding gear transmission and propeller wheels and couplings for boat shafts were also shown.

Convertible Two and Four-Cycle Engine.

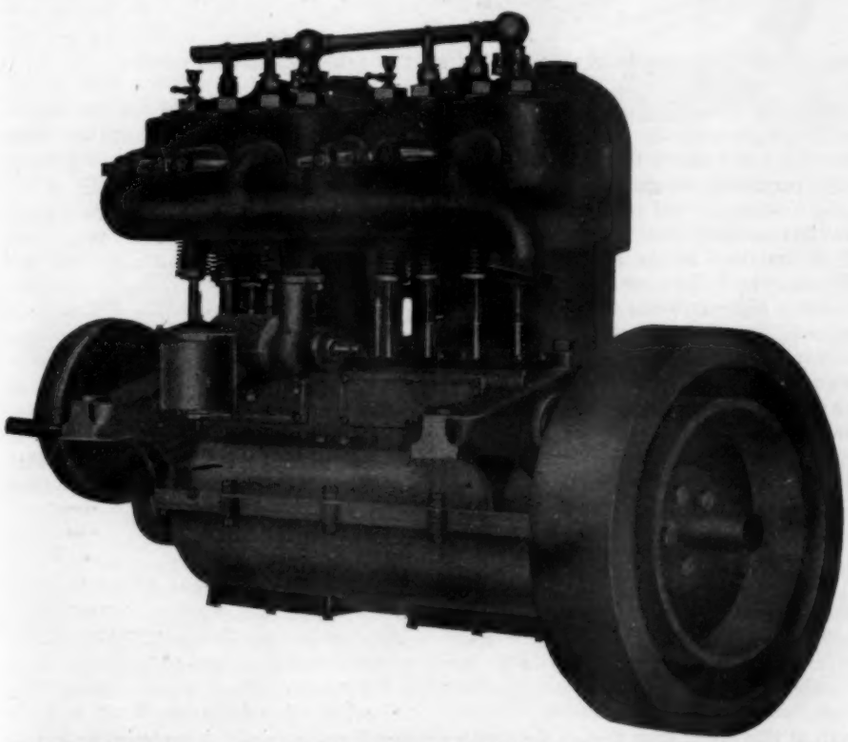
An engine of novel construction, which it is to be regretted was not seen in actual operation, was a convertible two and four-cycle vertical four-cylinder motor shown by the North Chicago Machine Co., of North Chicago, Ill. Outwardly it follows the appearance of an ordinary engine with separate cylinders and exhaust valves on one side close to the eduction ports. A closer examination, however, shows that the camshaft is adjustable in the direction of its length and is fitted with separate sets of cams, and also that the inlet valves are horizontally placed, each valve located in the top of the crankcase just below the cylinder seating. The heads of the cylinders and exhaust valve chambers are also removable. In the center of each piston there is an ordinary mushroom valve of large diameter.

Starting an examination of the cycle of operations, the conditions are of course the same for both two and four-cycle on the power stroke. When working two-cycle, after the completion of this stroke the piston on its upward movement expels the burnt gases and at the same time the charge in the crankcase, under compression, rushes up through the valve in the piston. After the exhaust valve closes the upward movement of the piston creates an excess of pressure above the piston which closes the valve in the piston and the charge is ready for ignition. Meanwhile the inlet valve has been kept open and the piston again on its power stroke compresses the gases in the crank chamber. The cams for the two-cycle operations are of course in contact with the shoes in the push rods, which in this case are circular.

When running four-cycle the other set of cams is slid in place and the timing is deranged so that on the completion of the power stroke, the next upward stroke is for scavenging only, the inlet valve being opened during this stroke. On the next downward stroke the gases in the crank chamber flow upward through the valve in the center of the piston into the cylinder and are compressed on the following upstroke and are ready for the ignition which precedes the power stroke and so on. Cam shifting is controlled by an ordinary lever movement. It is the intention that the engine should be used ordinarily as a four-cycle motor, but that on grade the two-cycle system would give a reserve of power.



CONVERTIBLE TWO AND FOUR CYCLE ENGINE WITH MUSHROOM VALVES IN CYLINDER HEADS.



ENGINE SUGGESTIVE OF RENAULT CONSTRUCTION, BUILT BY CONTINENTAL MOTOR MFG. CO.

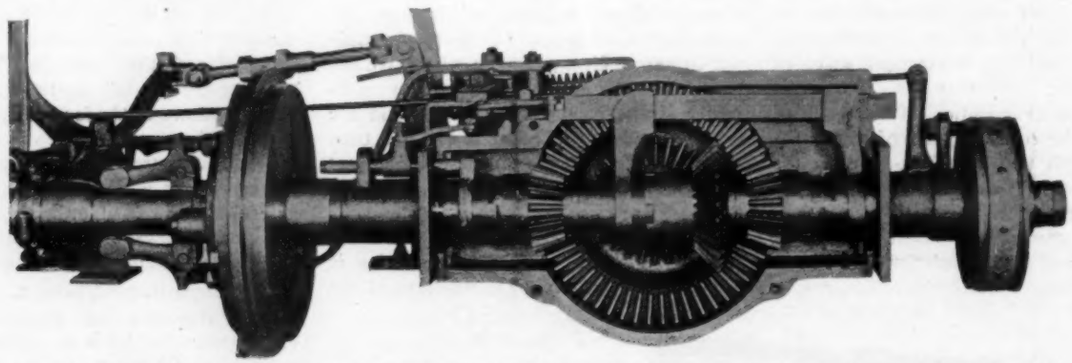
Chicago-Built Vertical Motors.

Two three-cylinder and four-cylinder vertical water-cooled motors were shown by the Continental Engine Co., of Chicago, for the first time. In general design the motors follow modern French practice with cylinders cast in pairs in the even multiples, mechanically actuated valves, enclosed gears, crankcase divided longitudinally and a judicious use of materials in construction to save weight for power. Another motor of the horizontal type, illustrated by drawings but not exhibited, had four cylinders, double opposed, with the cylinder centers of each pair coincident, this being effected by the use of a double trunk piston with slotted connections and one connecting rod from one cylinder working on the crank pin. Smaller specialties included special type of carbureter and positive gearpump and also an ignition timer with tool steel contacts. The fixed contacts are formed of two inclined planes with a rounded apex over which a revolving blade passes with a screw contact face giving a wiping connection and sharp break. There are no screws used in its construction.

Lauth Opposed Engines.

Double opposed horizontal engines with mechanically operated valves on top and cam-shaft lying above and parallel with the crankshaft were shown by J. Lauth & Co.,

of Chicago, who made a first exhibition appearance. They also showed a complete motor and transmission set for a single chain drive that was out of the ordinary. In this their regular double opposed motor was set transversely at the front of a subframe, with flywheel at the rear end of the crankshaft and a flexible joint connecting with the driving shaft. This joint consists of two ordinary disk clutches, the driving side holding fixed pins which accurately fit holes in the driven member, the pins being of sufficient length to permit the sliding of the driven shaft a distance sufficient to operate a disk friction clutch interposed between the motor and the speed change. The friction clutch is held in engagement by sliding a cone between the forward ends of two bell crank levers, the short ends of which bear directly the movable element of the clutch. Speed changing is effected by bevel gears, the driving pinions sliding on the shaft. Both of the driven pinions are keyed on the countershaft. Ordinary castellated or jaw clutches sliding on keys are used to couple the driving shaft with the driving pinions which are constantly in mesh with the driven gears. There are two speeds and reverse is accomplished by a third gear engaging the back end of the countershaft bevel gear. One lever operates the clutch and the speed changes.



LAUTH TRANSMISSION SYSTEM, IN WHICH SPEED CHANGES ARE EFFECTED BY BEVEL GEARS AND SLIDING PINIONS.

Two-cylinder horizontal opposed and four-cylinder vertical engines built on good modern lines were shown by the Beaver Manufacturing Company, of Milwaukee.

New Type Briscoe Radiator.

In an extensive exhibit of radiators of various forms and styles the Briscoe Manufacturing Co., of Detroit, showed a new honeycomb radiator with tubes 4 1-4 inches long and with 1-16 inch water spaces. The tubes are made square at the ends and fluted along the sides, this section giving a certain amount of elasticity to the construction, so that in freezing weather ice formed would not necessarily cause rupture of the tubes.

Stolp Coil Radiator.

A novelty in cooler construction was shown at the stand of the Stolp Manufacturing Co., of Chicago. This was of the coil type with round tubes set vertically in headers, and instead of the ordinary radiating fins spirals of looped wire were wound around the tubes giving quite a light construction. The difficulty hitherto has been in attaching the wire to the tubes. This is now accomplished by a special machine in which the radiating wire is wound in a flattened coil through which is passed a steel wire and also a wire of solder. The coil is then spirally wound around the thin radiator tube and the temperature raised so that the solder melts and causes the permanent wires to adhere to the tube. Another form of radiator of a different type consists of vertical water tubes in which the fins, instead of being separate, consist of sheets of metal laid on horizontally, holes punched in the sheets permitting the passage of the pipes in assembling. The plates are held in place by the immersion of the tubes in a bath of solder. One advantage claimed over the ordinary construction is that should a tube become clogged the adjacent radiating surface would not be entirely inoperative as in the case of tubes with independent fins. As the plates fit tightly around the tubes and are all in one piece they act as braces and can be made of very light material. It is stated that the radiator has 7 square feet of radiating surface per pound of gross weight. It is a neat looking job and certainly is worth investigating by builders.

At the stand of the Long Mfg. Co., of Chicago, the well-known spiral tube coolers in many different forms of frame were displayed. In this construction a corrugated copper ribbon is wound spirally on the round radiator tubes and by a new method of manufacture is soldered in position without covering the entire tube and flange with solder.

Knoblock-Heideman Ignition Apparatus.

Ignition dynamos, magnetos and spark coils in several styles and sizes were shown by the Knoblock-Heideman Mfg. Co., of South Bend, Ind. These follow along modern lines of design and show good workmanship. An interesting little apparatus shown, though not exactly in the automobile line, was a watch demagnetizer both for direct and alternating currents, both at low prices even though the apparatus is simple in the extreme.

Exmoor Storage Batteries.

Exmoor storage batteries were shown for the first time by the Exmoor Storage Battery Co., of Chicago, which has been conducting a series of experiments for a long time. The battery is applicable either to carriage work or ignition. It is of the pasted type and the special feature is that the active material is subject to a hardening process, which it is claimed produces a perfectly porous plate and yet one that will not buckle. It can be charged and recharged without appreciable deterioration, the company claims, and consequently frequent washing of the cells is unnecessary.

A working arrangement of an ignition system to use preferably with an alternating current magneto and employing a coil without vibrator or condenser and a timer without sliding or touching contacts was shown by J. M. Wilson, of Chicago, the inventor.

Bestogo Secondary Batteries.

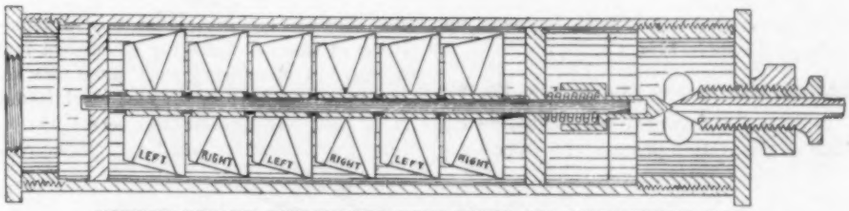
Bestogo storage batteries for electric vehicles and also for electric headlights for automobiles were exhibited by the Miller Signal Co., of Chicago. In this battery the active material is a special composition carried in a stamped lead grid, and for which great efficiency and durability is claimed.

Duplex Two-Core Coils.

Jump spark coils made by the Duplex Coil Co., of Fond du Lac, Wis., were shown both in action and out. The feature of the coil is the use of two cores, two primary and two secondary windings all connected to act as one unit. The division of current places less strain upon the insulation than in the single coil type, the designers believe. One spring and an armature covering both cores is used, permitting the employment of a strong spring and light armatures with consequent rapid vibrations. Coils for single, double and four-cylinder engines were shown.

Young's Rotary Carbureter.

Young's rotary carbureter was exhibited by the Culver Novelty Co., of Culver, Ind. This consists in effect of a brass cylinder with the feed connected to one end and the outlet to the induction pipe connected to the other. A spindle concentric with the barrel carries light brass wheels free to rotate interdependently on this spindle and



YOUNG'S ROTARY CARBURETER WITH RIGHT AND LEFT WINGED FANS.

provided alternately with right and left handed vanes. The engine suction draws the mixture through these wheels which rotate rapidly and their function is to break up the mixture and cause complete gasification. The end of the fuel pipe inside the barrel is closed by a needle valve held horizontally in place by the pressure of a spring bearing against a perforated plate which is free to move back and forth in the barrel. In starting the engine suction draws air in through the air ports ahead of this plate and it is thus forced down on the spring and the fuel valve opens. An inspection of the accompanying sectional drawing will make the construction quite clear.

A very fine exhibit of cushion springs was made by the Jackson Cushion Spring Co., of Jackson, Mich., showing complete springs for seats of all shapes without wood frames. The method of securing the coils to the wire frames and the coupling up of these coils by spirals, which give great flexibility to the seat in all directions, are the subject of patents.

Artz Folding Tonneau.

An odd exhibit that was of interest to complete vehicle makers and runabout owners was the Artz folding tonneau shown by the Dayton Folding Tonneau Co., of Dayton, O. A regular tonneau with lower frame, back, sides and seat is made collapsible so that when folded up it looks not unlike an oyster shell. This is intended to be secured to the rear of any runabout having a back extension, so it can be folded

ARTZ FOLDING TONNEAU CLOSED.

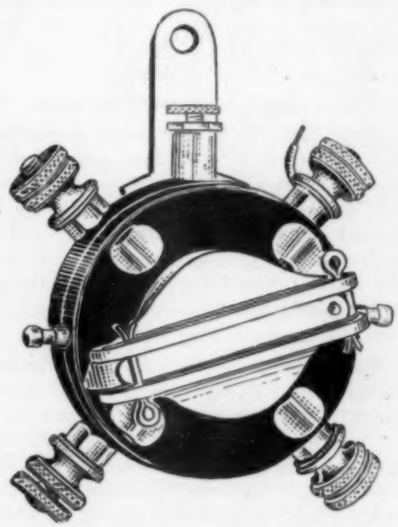
down when the car is used by two persons only.

Lamps With Interchangeable Parts.

Automobile lamps for oil, gas and electricity in many styles and sizes were shown by the Standard Carriage Lamp Co., of Chicago. One of the features was a headlight of the familiar barrel shape built on the interchangeable system so that any part can be speedily removed when required. A lamp of this type that was attractive had an oxydized body, giving it a gun metal appearance. A split bracket was also shown in which the forks were separate so that one could be renewed if needed without having to replace an entire bracket. A ball tail light was fitted for burning acetylene gas, the intention being to connect all the lamps on a car with the gas producing system.

Novelty in Circulation Pumps.

At the stand of McCord & Co., of Chicago, in the annex there were exhibited in operation the McCanna force-feed lubricators in which the duplex pump carries oil first from the reservoir to the outlet pipe and then from this pipe to the feed line reaching from the lubricator to any con-



CONTINENTAL IGNITION TIMER.

nected point on the car. The travel of the first pump plunger can be increased or diminished by turning a screw on top of the reservoir over the particular feed to be adjusted so that the rate of flow is under exact control.

A novelty exhibited here was a self-contained circulating pump with inflow and outflow chambers fitted with ball valves and a central chamber fitted with a float carrying a vertical wire with two small balls controlling the openings in a smaller upper chamber connected with one cylinder of a motor. The alternate explosion and exhaust strokes in the motor are thus communicated from the motor cylinder to the pump drawing in the water from the inlet side of the pump on the exhaust stroke and expelling it through the discharge on the

STOLP COOLER WITH VERTICAL TUBES AND HORIZONTAL PLATES.

explosion stroke. The duration of the pressure and exhaust alternations is regulated by the movement up and down of the float as the water chamber of the pump is filled and emptied. The device is exceedingly simple and has been tried on a fast running De Dion motor with complete success, the builder says.

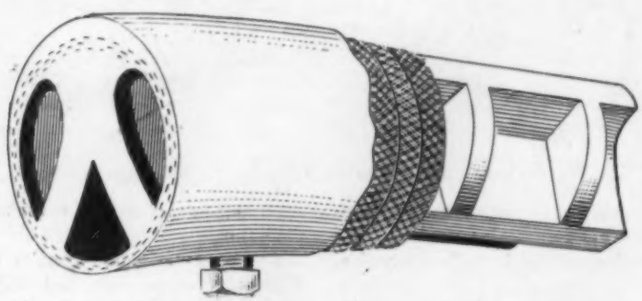
Another little specialty shown was the McKim gasket of soft metal in the form of a hollow ring filled with asbestos. This is made in many sizes and for many different types of motor, and is especially useful in seating spark plugs on which the ordinary asbestos washer is a delicate nuisance.

Pontiac Body in the Rough.

A side-entrance body in the rough with individual front seats attracted the attention of complete vehicle builders at the stand of the Pontiac Body Co. in the gallery. At the same stand a considerable variety of tops in four-ply mackintosh lined with cravanette were shown by Leinback Bros., of Detroit.

Cushion Tires.

Cushion tires of entirely different types were exhibited by the Fawkes Rubber Co., of Wisconsin, and M. E. Brooke, of Denver, Colo. Their construction, which is self-



FAWKES CUSHION TIRE WITH MOULDED CELLULAR CORE.

explanatory, is seen in the illustrations on pages 279 and 280. The Brooke tire has been in use on horse-drawn vehicles for some time.

An Anti-Skid Axle.

A working model of an "anti-skid axle" was shown by F. W. Hedgeland, of Chicago. In this design the use of a differential is unnecessary. Each end of the rear axle is fitted with a multiple square thread screw working in a nut screwed in the center of a plate with radial serrations or teeth on both faces. There are corresponding serrations or teeth in plates of equal diameter on the inner faces of the hollow hub, a projection of the axle turned cylindrical and working in a sleeve outside the hub forming the wheel bearing. When the car and wheels are moving in a straight line, forward or backward, the teeth in the plate engage with the teeth in one side or other of the hub

SUPPLEMENTARY SPRING ATTACHED.

SPRING READY FOR FITTING.

and the wheel revolves with the axle. On turning a corner, however, the increased speed of rotation of the outer wheel causes the plate to move along the screwed end of the axle releasing the hold of the teeth and permitting the wheel to run free. In principle the mechanism is similar to the familiar system of turning engine used to get a large slide valve mill engine off center when starting up.

Rawhide belts for motorcycles, rawhide gears and tire sleeves for protecting damaged shoes were shown at the stand of the Chicago Rawhide Mfg. Co.

Leather Renovating and Coloring Process

Many private owners stopped at the exhibit of the Nelson process of leather renovation and coloring made by the Jewel Mfg. Co, of Chicago. By the use of the preparations sold by the company faded car leathers can be cleaned and restored and the leather enameled in the old color, or if desired colored some darker shade. The color can be applied with a brush by any intelligent person and dries quickly and is guaranteed not to crack or wear off. The samples shown were of good color and the leather apparently very pliable.

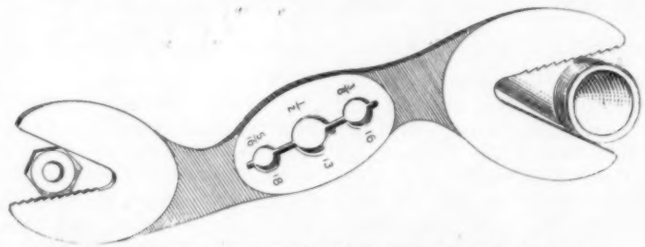
Supplementary Spring Suspension.

Great flexibility in rear spring suspension is sought to be obtained by a spiral spring device shown by the Supplementary Spiral Spring Co., of St. Louis. The change is made in the ordinary construction of spring end of hanger on the rear end of the car, the spiral spring being attached as shown in the illustration on this page.

Universal Socket Wrench.

Patent rights for America for the manufacture of an ingenious French socket wrench, styled the "Auto-Cle," have been secured by the Railway Appliances Co., of Chicago, which gave demonstrations of the uses of this tool. It is simply a ratchet wrench with a universal socket in which various ends fitting all sorts of nuts and an angle connection can be fitted at will. The tool is made of pressed steel and is fitted with a folding T handle so that the whole kit can be carried in a neat leather case 3 by 2 by 10 inches. It is one of the most ingenious articles on exhibition in the Coliseum.

At the same stand samples of the new Stanwood openwork steel step were on view. The tread is made of crimped steel forming a sort of diamond-shaped pattern, the construction preventing any accumulation of water and making an efficient foot scraper. The crimped steel strips are set on edges and held in a rolled steel frame. It is light and durable and seems an excellent substitute for wood and rubber running boards for side-entrance cars as well as for the ordinary iron steps.

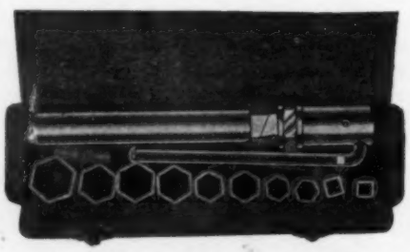


EDMONDS-METZEL UNIVERSAL GRIP AND THREAD CUTTER.

Concealed Lock Switch.

An auto lock to prevent any person switching on the ignition in the absence of the driver of a car is shown by the Auto Lock Co., of Chicago. Its construction is shown in the outline drawing on page 281. It consists of an ordinary contact switch fastened to the back of the dash under the bonnet and a connecting rim cylinder lock attached to the front of the dash. The key is of the ordinary flat corrugated type and can only be inserted or withdrawn when the switch is open. Turned to the right or left the key moves the switch that closes the ignition circuit. When the driver leaves the car he turns the lock so that the key is released and puts the key in his pocket.

FRENCH SOCKET WRENCH APPLIED.

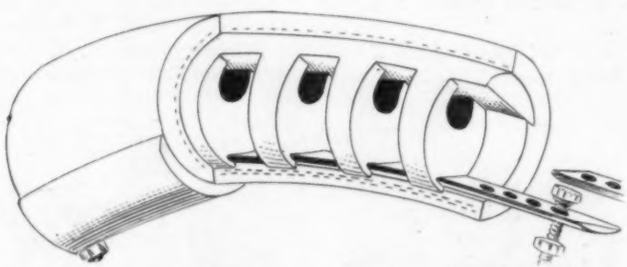


"AUTO-CLE" AND SOCKETS PACKED.

A somewhat similar lock for attachment to the front of the dash only is shown by the J. Bard Mfg. Co., of Chicago. In this switch a Yale lock is used.

Oils were well represented at the show, a considerable display being made by the Advance Packing and Supply Co., of Chicago, which has adopted the term "Autoleum," as a trade mark.

Steel springs in all the shapes and sizes used in car suspension were shown by the Detroit Steel Products Co., of Detroit.



BROOKE AIRLESS TIRE, SHOWING ADJUSTABLE ATTACHMENT BAND.

Cloth Wind and Dust Shield.

A novelty in the way of wind and dust shields was announced by the London Auto Supply Co., of Chicago, which showed a line of tops and aprons. The new shield is made of water proof cloth carried as a frame of the usual sort and in the center a large sheet of transparent, flexible celluloid is inserted. This screen is carried on a strong spring window shade roller so that it can be drawn up or let down out of the way altogether into a box at the bottom of the frame on the dash.

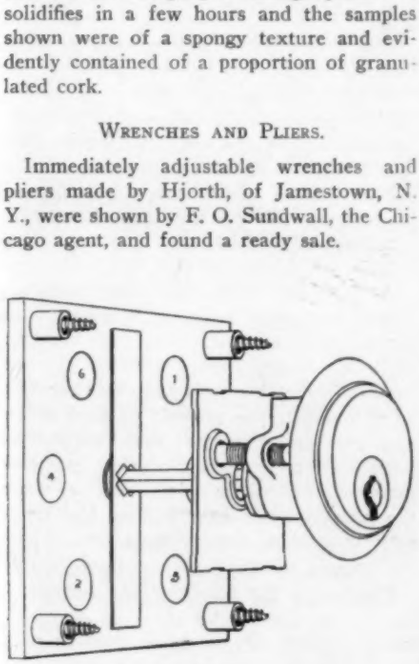
Samples of a tire filling compound and of filled tires were shown by the Chicago

HJORTH WRENCH AND PLIERS.

Tire Filling Co. This compound is made up in liquid form and is filled into the tires at the company's Chicago plant. It solidifies in a few hours and the samples shown were of a spongy texture and evidently contained of a proportion of granulated cork.

Wrenches and Pliers.

Immediately adjustable wrenches and pliers made by Hjorth, of Jamestown, N. Y., were shown by F. O. Sundwall, the Chicago agent, and found a ready sale.



RIM CYLINDER AUTO-LOCK.

A "universal grip" solid wrench with thread dies in the body was also an attractive exhibit at the stand of the Edmonds-Metzel Mfg. Co., of Chicago.

Acetylene projectors with both ends hinged were shown by the Edmunds & Jones Mfg. Co., of Detroit. A specialty of this concern is a set of lamps, including headlights and tail lights, piped to one gas generator.

Some beautiful samples of color work in the shape of curved wood panels, painted and striped, were on exhibition at the stand of the Sherwin-Williams Co., of Cleveland.

Western Supply House Displays.

Users of automobiles could always be seen in numbers around the stands of the supply houses, some of which had not shown at the Garden but presented very complete lines of goods at the Coliseum Show.

The Beckley & Ralston Co., of Chicago, had an extensive line of samples of equipment and accessories from airless tires to Veeder Odometers.

A very large space was occupied by the miscellaneous collection of useful articles handled by the Motor Car Supply Co., which distributed broadcast an envelope containing a general catalogue of supplies and literature about specialties.

Another large exhibitor in this class was the Automobile Supply Co., of Chicago, which had so many different lines of goods on view that a 100-page catalogue was devoted to automobile parts and accessories alone.

ILLINOIS STATE ASSOCIATION.

Good Roads and Just Laws the Objects of Club Organization.

Special Correspondence.

Chicago, Feb. 11.—The Illinois State Automobile Association was formed Wednesday, February 8, at the Chicago Automobile Club's Michigan avenue home. The object of this association of clubs is to endeavor to secure the enactment of sane and reasonable laws governing automobilists, and to take up the good roads' movement with the intention of showing by practical work in the rural districts that the automobile is a leader in the march of progress.

Six clubs sent delegates to the meeting, as follows: Springfield, Burke Vancil; Aurora, W. S. Ferris; Bloomington, S. P. Irwin; Rockford, H. N. Dickerman; Kankakee, C. H. Cobb; Chicago, Sidney S. Gorham. Letters were received from other clubs throughout the state saying they would have representatives at the next meeting, and would assist in forwarding the movement.

A brief session was held in the forenoon and a recess taken at noon to permit the delegates to attend the luncheon given by President Farson. At the afternoon meeting Sidney S. Gorham, secretary and counsel of the Chicago Automobile Club, presided, and Robert W. Spangler was appointed temporary secretary.

A committee on organization and by-laws was appointed as follows: Burke Vancil, Sidney S. Gorham and S. P. Irwin. This committee was instructed to report at a meeting to be held early in March, at which time permanent officers will be selected.

Isaac B. Potter, president of the American Motor League, was present and gave some helpful advice for the formation of the organization. Secretary C. H. Gillette, of the American Automobile Association, also volunteered some suggestions along the same lines.

Mr. Potter, in his talk, complimented the governor of the state on the firm stand he has taken on the good roads' question, and then made the following suggestions:

"Let automobilists, business men, and farmers show the governor they indorse his views.

"Enact modern laws regulating highways. Those now on the statute books were modeled after similar ones discarded fifty years ago in England.

"Have a state road department appropriate a sufficient amount annually for the construction of roads and apportion it among counties and towns on the petition system, the local organization paying their proportionate share of the expense.

"Put convicts to work on the roads if it is considered desirable. The system works well in North Carolina. It is better for the convicts and better for the community.

"It would not be a bad idea to take representative men over the roads of the state in automobiles.

"A well-drained macadam road, with a top surface of six inches, will make the best and least expensive road for Illinois."

"Wherever the good road movement has been taken up in earnest," said Mr. Potter, "especially in New York, Connecticut, New Jersey, and Massachusetts, the farmers who originally opposed the improvement have afterwards been the most enthusiastic supporters of it."

FARSON DINNER TO N.A.A.M.

Club Men and Manufacturers Enjoy Annual Banquet and Speeches.

Special Correspondence.

Chicago, Feb. 11.—The annual dinner given by President Farson, of the Chicago Automobile Club, to the National Association of Automobile Manufacturers, which has become one of the pleasant features of Chicago show week, was held Wednesday, in the tower room of the Union League Club, where many of the distinguished men of the United States and foreign countries have been entertained.

Nearly twenty-five guests were seated at the table, and at the close of the dinner, addresses were made by Windsor T. White, president of the N. A. A. M.; Milton J. Budlong, S. A. Miles, W. D. Cooper, E. R. Thomas, Edgar Apperson, Ira M. Cobb, John Farson, Jr., Isaac B. Potter, Sidney S. Gorham, C. H. Gillette, Burke Vancil, Fred J. Pardee, and W. S. Ferris. Good roads, the development of the automobile, and the wonderful progress made in the industry, were the principal topics handled.

Belgian roads are almost all paved with stone blocks, and those who have driven automobiles over them say that they are even worse than the American bad roads.

Dry cells that have outlived their usefulness for ignition purposes may frequently be used for some time for bell ringing and other domestic work.

Wonderful Development of French Industry.

Value of Output $34,000,000 in 1904—Nearly 30,000 Cars and 20,000 Motorcycles Registered.

THE increased use of automobiles during the past few years has been so enormous that the manufacture of motor cars and their accessories has become one of the most important French industries. From a total of 1,850 automobiles in 1898, valued at $1,602,000, the output in 1904, according to the Chambre Syndicate de l'Automobile de France, has grown to 22,000 cars, of an estimated value of $34,000,000.

The yearly output of automobiles from 1898 to 1904 was as follows:

FRENCH OUTPUT FROM 1898 TO 1904.

Year.	Number.	Value.
1898	1,850	$1,602,000
1899	1,900	1,833,500
1900	5,000	5,307,500
1901	8,800	10,229,000
1902	16,500	19,107,000
1903	19,500	26,248,000
1904 (estimated)	22,000	34,000,000

According to statistics published by the Minister of Finance, the number of automobiles registered in France, and upon which taxes have been paid, since 1899 is as follows:

AUTOMOBILES REGISTERED IN FRANCE, 1899 TO 1903.

Year.	One or two occupants.	More than two occupants.	Totals.
1899	946	726	1,672
1900	1,259	1,638	2,897
1901	2,493	2,893	5,386
1902	3,404	5,803	9,207
1903	5,546	14,340	19,868

It is estimated that by January 1, 1905, the number of cars registered reached nearly 30,000. In 1903, in addition to 19,886 automobiles, there were registered 19,816 motorcycles and 1,310,223 bicycles. Taking $1,400 as an average price for automobiles, $140 for motorcycles, and $35 for bicycles, on January 1, 1904, there were over $75,000,000 invested in France in mechanically propelled vehicles.

The number of workmen employed in the automobile industry of France in 1904, according to the president of the automobile syndicate, is at least 55,000 skilled mechanics and 25,000 employees and clerks, to which should be added about 20,000 chauffeurs, making a total of 100,000 persons who are directly identified with the industry.

IMPORTS AND EXPORTS.

The extraordinary growth of the French automobile trade is indicated in the accompanying table, in which are given the values of the imports and exports of motor cars and motorcycles into and from France since 1898.

The values of the imports and exports show a progressive increase, especially those of the exports of automobiles, which, from $337,600 in 1898, reached nearly $12,000,000 during the first ten months of 1904. The values of the imports from the different countries during the first ten months of 1904 were: Germany, $423,349; Belgium, $40,144; Italy, $34,161; Great Britain, $25,283; Switzerland, $18,721; United States, $9,071; other countries, $26,827.

The destinations and values of French-made automobiles exported in 1902 were as follows: Great Britain, $3,719,000; Italy, $480,000; Belgium, $397,000; Germany, $349,000; Algeria, $219,000; Tunis, $82,000; Indo-China, $19,300, and other countries, $567,000. The customs statistics do not specify the exports to the United States, but the value of automobiles declared for export in the different American consulates in France during the calendar year 1902 was $947,164.

The questions arise whether or not American motor-car manufacturers can supply the wants of their home market, thus reducing the imports of foreign-made cars, and if outlets can be found in France for the sale of American automobiles.

AMERICAN AND FRENCH AUTOMOBILES.

It is the universal opinion of the French manufacturers and dealers with whom I have corresponded and with whom I have had personal interviews, writes American Consul A. M. Thackara, at Havre, that the competition of American automobiles with their higher grade cars is, at this time, not greatly to be feared. They claim that, although the American manufacturer with perfected automatic machinery and up-to-date shop methods can make the parts of an automobile cheaper than they can be turned out in any other country, the same care in assembling the parts is not taken in the United States as in France. They admit, however, that the Americans have shown great improvement in automobile construction during the past year.

In the large French automobile manufactories, many of which are fitted with the most improved American machines, the cars are made in series. The parts are manufactured in quantities, but each car in the series is erected by a crew of skilled mechanics called "ajusteurs," who do most of their work by hand. It is estimated that 50 per cent. of the labor expended in the construction of a higher grade French motor car is hand labor. This is, of course, expensive, but the French manufacturer claims that it is the only way of turning out reliable cars.

I am assured by several French dealers that there is a favorable opportunity in France for the sale of the light American cars, which for their cheapness, durability, and efficiency would appeal to a class of automobilists who can not afford to buy the more expensive cars.

HOW TO INTRODUCE TRADE INTO FRANCE.

I would strongly advise our manufacturers, who desire to export their products to this country, either to visit France themselves or to send capable representatives to ascertain at first hand whether or not the conditions are favorable for opening a foreign trade. In Paris, which is the center of the French automobile world, useful knowledge can be readily obtained which may be the means of saving much money and perhaps of avoiding future disappointment.

It is very doubtful if a satisfactory trade could be established by correspondence, by catalogues, or by photographs. Judicious advertising in the French and other trade journals will be necessary, but the quickest and best method of catching the French public is either to win or to secure a good place in the road races, endurance and hill-climbing tests, which are constantly being held in this country.

A point to which our manufacturers should pay great attention is economy in consumption of fuel. In this country, where the average retail price of gasoline for use in motor cars is 7.72 cents per liter (1.05 quarts), the amount of fuel a car consumes at an average speed is an important factor in making a sale. In European countries where automobiles are made the manufacturers have studied fuel economy as much as any other feature.

PRICES OF FRENCH AUTOMOBILES.

Concerning the prices of automobiles in the French market for the coming season, the automobile editor of one of the leading Paris journals writes me as follows:

"The prices for the favorite French makes are about the same as last year, with one or two exceptions. Where prices have fallen the reason can generally be found in the

FRENCH IMPORTS AND EXPORTS OF AUTOMOBILES AND MOTORS, 1898 TO 1904.

Year.	Imports. Automobiles.	Imports. Motorcycles.	Exports. Automobiles.	Exports. Motorcycles.
1898a	$76,249	.....	$337,625	.....
1899a	91,289	.....	821,987	.....
1900a	99,781	.....	1,817,481	.....
1901	130,468	.....	3,046,926	$32,231
1902	208,247	$2,123	5,832,267	105,764
1903	293,746	2,702	9,822,156	112,326
1904 (10 months)	577,456	7,913	11,953,069	211,142

aIn 1898, 1899, and 1900 separate figures were not given in the official statistics for motorcycles; they were included under the classification of motorcycles, bicycles, and parts of same.

fact that the makers have a stock of last year's models on their hands. From an intimate knowledge of the leading French makers and agencies, I can safely say that very keen competition is expected in the coming year, and, though there is at present no talk of serious reductions in prices being made, I am certain that toward the end of next season—that is to say, in October and November—many agents will have to reduce their terms in order to get rid of their stocks."

Customs Duties on Automobiles.

The customs duties on automobiles imported into France directly from the United States are as follows: Sixty francs ($11.58) per 100 kilograms (220.46 pounds) net for motor cars weighing 125 kilograms (275.5 pounds) or more; less than 125 kilograms, 150 francs ($28.95) per 100 kilograms net. If the importation is made indirectly through a European port (Great Britain, for instance), the above duties are increased 3.60 francs (69.5 cents) per 100 kilograms.

Freight Rates to France.

The rates of freight on automobiles by the steamers of the French line are as follows, per 40 cubic feet: From New York to Havre, by express steamers, $8, plus 5 per cent.; by cargo boats, $4.50, plus 5 per cent.; from New York to Paris, by express steamers, $12, plus 5 per cent.; by cargo boats, $8.50, plus 5 per cent.

The cubic measurements of an automobile weighing, when boxed, 1,220 kilograms (2,690 pounds) is about 396 cubic feet; one weighing 1,750 kilos (3,858 pounds), about 490 cubic feet, and one weighing 2,270 kilos (5,004 pounds), 580 cubic feet.

Landing and Custom-House Charges.

The following *pro forma* account shows the landing and custom-house charges at Havre on automobiles weighing 1,220 kilos net (2,645 pounds):

Item.	Charges. Francs.	Dollars.
Landing charges	15.00	2.89
Customs stamp	1.20	.23
Customs permit	.70	.13
Customs duty (net weight, 1,200 kilograms, at 60 francs per 100 kilos)	720.00	138.96
Receipt stamp	.50	.10
Unpacking	15.00	2.89
Brokerage	10.00	1.93
Delivery at garage	10.00	1.93
Total	772.40	149.06

For automobiles weighing over 2,000 kilograms (4,409 pounds), derrick charges amounting to 42 francs ($8.10) should be added to the above.

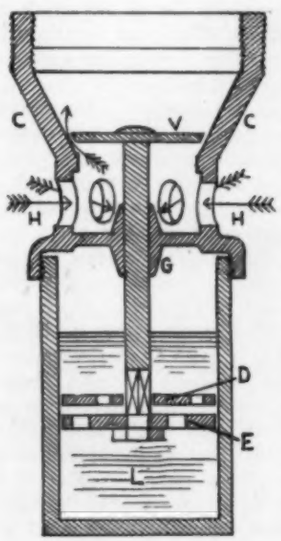
With their great sources of supply of raw material, their indomitable energy, their up-to-date and economical manufacturing methods, and their skilled operatives, there is no reason why American manufacturers should not secure a proper share of the world's trade in automobiles, motorcycles, and motor boats, which is bound to increase.

Regulator for Carbureters.

Special Correspondence.

Paris, Jan. 27.—Almost every week some new kind of an automatic carbureter makes its appearance on the market, so that the buyer is at a loss to select the good from the bad ones. Among the novelties there are, however, always some which are built on new or sound principles, and which theoretically appear to be likely to give satisfaction. A device of this kind has just been brought out, and until actual experience proves the contrary, it can be considered a good thing. It is an air inlet regulator, which can be adapted to any existing carbureter, or can be used on a special carbureter brought out by the same inventor. It might be defined in a few words as a hydraulic brake on the air inlet.

The usual type of automatic carbureter is based upon the action of springs or automatic inlet valves for the extra air supply.



HYDRAULIC REGULATOR FOR CARBURETER.

It should be considered, according to the inventor of the new device, that the resistance of the springs increases as they change in length, so that their play is never in constant proportion to the depression created by the engine. On the other hand, valves never follow exactly every suction, and when the engine runs fast the valve is absolutely beyond the control of any spring or fitment, the inventor says. At the same time, when the engine revolves slowly with the minimum throttle opening, and the throttle is opened suddenly, the inertia of the fuel, as well as that of the moving parts of the carbureter, is such that the engine almost invariably comes to a stop, or revolves irregularly and without supplying any power for a few turns.

In the suction regulator which is illustrated herewith, the entire supply of air to the carbureter has to enter through small holes, as shown by the arrows at *H*. These are surmounted by a cone *C*, inside which a valve *V* has its seat. The long stem of this valve, which is guided at *G*, is squared at its lower end and on this square is allowed to slide a flat disk *D*, a similar disk *E* being screwed fast at its lower end. These two disks are drilled with holes so placed that they do not correspond, the square end of the valve stem keeping *D* from revolving and bringing its holes in line with those in *E*. The lower part of the apparatus, *L* is filled with glycerin or any other thick liquid.

In operation the suction of the piston has a tendency to lift the valve *V* off its seat, but the glycerin in *L* prevents this action occurring too quickly, since the lift of the valve stem and the resistance of the liquid above the plates to keep the plates close together, and the valve can be lifted only as fast as the glycerin passes between the plates and the body of the glycerin pocket, which is very slowly. Moreover, the tendency of the valve to fall back again between each suction stroke is counteracted by the inertia of the liquid; consequently the valve maintains nearly a constant position for every speed of the engine, thus regulating exactly the flow of the air through the carbureter. If the engine slows down, the suction being less for the same lift of the valve, the weight of the valve will cause it to fall gradually until it finds a new stationary position. The effect of the valve is thus to prevent any sudden changes in the conditions existing in the carbureter, and to regulate exactly the depression causing the fuel to flow out of the spraying nozzle.

Poor Crystal Palace Show.

Special Correspondence.

London, Feb. 4.—The fourth annual exhibition of motors and accessories at the Crystal Palace was held from January 27 to February 4. This show, which in previous years was one of great importance, has lost public favor mainly because the Society of Motor Manufacturers and Traders had decided to hold its own show at the Olympia, instead of patronizing the Crystal Palace, as in former years.

The exhibits were limited in number, the main stands being occupied by the British Commercial Automobile Syndicate, which staged the Talbot, Spyker and Hotchkiss cars; Triswells, Ltd., which handles Peugeot cars in England, and the Horbick and Hallamshire firms, which make good cars of their own special design. The usual assortment of accessory and fittings stands were there, but a notable absence of novelties was apparent. Indeed, the show has so much fallen off both in the quantity and quality of the exhibits that it will not be surprising if the management decides to discontinue holding the show.

On the other hand, the Olympia show, which runs from February 10 to 18, promises to be an immense success.

French Entries Close.

Special Correspondence.

PARIS, Feb. 2.—With the closing of the entries for the Gordon Bennett and Grand Prix eliminatoires last night, a definite stage has been reached in this complicated and much discussed event. Twenty-six cars have been entered, including three Panhard & Levassor, one Charron, Girardot & Voigt, three De Dietrich, three Darracq, three Renault, three Mors, three Bayard-Clement, three Hotchkiss, three Richard-Brasier and one Gobron-Brillié. Last year twenty-nine cars entered for the eliminatoires, Gobron-Brillié having three instead of one, Serpollet three and Turcat-Méry two. Two firms have entered this year that were not represented in 1904, namely, Renault and Charron, Girardot & Voigt. The total entrance fees paid to the Automobile Club of France amount to $52,000. There is no doubt that the entrance fee of $2,000 for each car has kept down the number of entries, it being impossible for any but wealthy firms to face the heavy expenditure involved by competing in the eliminatoires.

Relations between the French club and foreign automobile clubs are still in an unsatisfactory condition. England has protested and is still holding back. Switzerland objects to the two races being run together, Germany has adopted the same attitude, and finally the Austrian Automobile Club has just sent in an official protest against the Gordon Bennett race being incorporated in the Grand Prix. The committee of the French club has replied to the different objections, but up to the present has in no way changed its decision.

The president of the French club left Paris this week in order to be present at the opening of the Berlin salon. He took with him a golden medallion which will be presented on behalf of the committee of the French club to the German Emperor in recognition of his services rendered to automobilism during the Gordon Bennett contest last year. A great deal of mystery has shrouded the action of the French club in this matter, but it is hardly necessary to say there is nothing more than an exchange of friendly sentiments between automobilists, and the watchful jingo party need not trouble about the frontier question. Doubtless during his visit to Berlin Baron de Zuylen will endeavor to arrive at an understanding with the German Automobile Club, in order that their participation in the Gordon Bennett and Grand Prix races may be assured. Although the German club has officially announced its intention to abstain from the race, the Mercedes people have declared that they will enter for both events, and have inquired if entries will be accepted from individual constructors apart from the national clubs. In Switzerland also there appears to be a tendency to break away from the official decision of the club, and it would not be surprising if the same thing happened in England.

M. L. de Santa Maria has offered to the French Automobile Club three medals to be presented to the mechanics of the three first cars in the Grand Prix race. The medals are in gold, silver and bronze, respectively.

Notes from London.

Special Correspondence.

LONDON, Feb. 4.—The lightweight motorcycle trials have been fixed for April 3 to 8 next, the total distance being 1,000 miles. Machines must not weigh more than 100 pounds exclusive of fuel and batteries, and the riders must weigh or be weighted up to eleven stone, to insure that conditions will approximate to those of actual touring. The trials will probably be conducted from a provincial center and an out and home course of eighty miles will be covered twice daily. The lightweight branch of the motorcycle industry will without doubt be benefited by these trials and a still further spread of the sport of motorcycling will result. One of the English motor journals has compiled a list of motorcycle registrations, which shows that the surprising total of over 29,000 motorcycles were registered in Britain last year.

The ill-management of the recent Delhi-Bombay trials in India has caused much dissatisfaction in England. The English Wolseley small car went through the 600 miles without loss of a mark and the Napier and Lanchester cars lost but 3 1-2 marks between them, yet for some unaccountable reason the first award was given to the 24-horsepower De Dietrich, which had a bad record of 58 marks against it. Similarly the F.I.A.T. car, with 69 marks against it, was awarded the Rampin trophy. Over here it is felt that the trials have done far more harm than good to the industry and have given a set-back to the spread of automobilism in India.

Imrie Kiralfy, director of the Earl's Court Exhibition Grounds, has formed a scheme for the construction of a motor racing track forty to fifty feet wide and 1 1-4 miles in circumference. The track will be well banked and high speed motorcar races will be possible. Full details are not yet obtainable, but it is probable that the track will be ready for use by the summer of 1906.

German Auto Regulations.

Regulations governing the use of automobiles in Germany are made by the police, and are always subject to change by simple order, writes American Consul Frank M. Brundage, from Aix-la-Chapelle. All rules are strictly enforced. On arrival, the owner of a machine must go to police headquarters, give his name, age and place of birth, name of machine, where manufactured, weight, etc., and make formal application for a police number. No action can be had until after twenty-four hours have elapsed, when, if no objection intervenes, a sealed letter will be given to the applicant, to be delivered to an official appointed by the police, in most cases an automobile manufacturer or agent, who will fix a time to present the machine for examination. After the examination a sealed letter is given by the examiner to the owner to take to police headquarters. If all regulations are complied with and the examiner's decision is satisfactory, after twenty-four hours a police number, a foot square and made of tin, with number, etc., nicely painted, will be brought to the owner of the machine, with a charge of 1.5 marks, or 35 cents. The sign must be fastened to the rear of the car, and a lamp must be so adjusted as to throw light directly upon the number.

The following are a few points in the police regulations that are specifically passed upon by the examiner: The auto must have two separate and hanging brakes; each brake must be capable of bringing the machine to a standstill while at a ten-mile gait within 8 meters (26.24 feet), and the machine must be capable of being turned in a street ten meters wide (32.8 feet); it must emit no smoke or smell; the exhaust must not be in evidence upon the street; it must make no unnecessary noise, and it must be a safe and mechanical machine. The lamps must be of clear glass and throw a light 20 meters (65.6 feet) in the darkest night. The steering gear, brakes and horn must be so placed that the driver will not mistake them in the dark. A plate, with name of the machine, where made, horsepower and weight must be in sight, and the machine must not appear on the streets or roads without a number. No one under the age of eighteen years is permitted to drive an automobile. Printed police license on heavy linen paper, free of charge, is given, and must always accompany the automobile for police inspection. The license is always subject to recall.

The duty upon a machine as a whole is $1 per 100 pounds; lamps and detachable fixings are subject to an additional specific duty. The duty on four rubber pneumatic tires is approximately $2. The insurance and freight on a machine from New York or Philadelphia to Germany is approximately $30 to $40. Customs duties can be paid subject to return, when the automobile leaves German soil within one year and the custom seal is not broken or off the machine.

An American automobile was recently refused a license in this district because all these regulations were not complied with. This gave competitors an opportunity to talk. It is very easy to give such competitors an opportunity to disparage an American machine. The refusal to grant the license has resulted in taking the machine off the market for the time being. Small cars must have two separate hanging brakes or one large brake.

Uncle Joe Cannon has just spent a year's salary for an automobile.—*Martin's Ferry (O.) Times.*

Opening of the Detroit Show.

Biggest Local Exhibition Ever Held Crowds Armory Beyond Its Limit — Observations on First Night.

Special Correspondence.

DETROIT, Feb. 13.—In a blaze of glory the fourth annual automobile and sportsmen's show in the world's center of automobile manufacture opened to-night. It is a great show for Detroit and is so far superior to last year's show that there is no comparison whatever; yet, withal the gain made it is decidedly not of the character desired. Its limitations, however, are because only of the four walls of the Light Guard Armory, the largest building in Detroit, for such a purpose. But the Armory is ridiculously small. It would be impossible to make a big coliseum pay in Detroit and while for years there has been talk of erecting one there is little likelihood that it will come for a long time. This show demonstrates, however, the positive need for a big building for exhibition purposes. Everything is sardined into the comparatively small space in a confusion that is absolutely bewildering to the layman. Of course, the man familiar with autos and auto shows knows just where to go and what to do, but otherwise it is a chaotic jumble with scarcely room enough to move around among the machines. The entire center of the floor is banked up in exhibits with but small passageways between them. Access is gained from the hollow square aisle that skirts the middle exhibits, and these aisles were packed to-night with people. The automobile show is getting to be the society event of Detroit and the wealthy class is taking it up as a means not only of seeing automobiles but of exhibiting costly raiment.

Another unsatisfactory feature is the one-sided character of the show. There is no international or even national aspect to the show. Even the Darracq and Berg cars that were here last year are missing. None of the big foreign cars are here, and while Americans have great confidence in American-made cars, nevertheless it is educational to see what builders are making across the water.

There are twenty-two exhibits on the floor, which amounts to upwards of 100 types of cars of various makes on exhibition. The gallery is devoted, with one or two exceptions, to accessories, and there are three dozen exhibitors showing almost everything needful in the automobile line. This side of the show is far more complete than ever before seen in Detroit.

List of Exhibitors.

The full list of exhibitors follows:

Main Floor—Automobiles: Packard Motor Co., Cadillac Automobile Co., William E. Metzger (showing the Cadillac, Pope-Toledo, Orient, Northern, Baker and Waverley), Northern Mfg. Co., Pope-Waverley, Pope-Toledo, Ford Motor Co., Pungs-Finch Gas Engine Co., C. H. Blomstrom Motor Co., Olds Motor Works, Reliance Motor Car Co., Maxwell-Briscoe Co., J. P. Schneider (showing the Peerless, Autocar and Columbia), Welch Motor Car Co., E. R. Thomas Motor Co., W. H. Weber & Co. (Rambler), White Sewing Machine Co., Wayne Automobile Co., Reid Mfg. Co., Stirling Auto Co. (Pierce and Studebaker electric), Young E. Miller (Elmore and Yale), Hammer Motor Co.

Gallery—Accessories: Auto Equipment Co., G. & J. Tire Co., Fisk Rubber Co., Warner Gear Co., Fawkes Rubber Co., Monier Cycle Supply Co., Twentieth Century Mfg. Co., Concentrated Acetylene Co., Diamond Rubber Co., Rose Mfg. Co., Badger Brass Mfg. Co., Firestone Tire and Rubber Co., S. F. Bowser & Co., Edmunds & Jones, Hartford Suspension Co., Carbondale Chemical Co., Morgan & Wright, Veeder Mfg. Co., B. F. Goodrich Tire Co., Hartford Rubber Co., Gray & Davis, American Lubricator Co., Briscoe Mfg. Co., Standard Oil Co., C. F. Splitdorf,, Goodyear Tire and Rubber Co., W. E. Metzger, McDonald, Wessels & Ames Co., Matchless Metal Polish Co., Armstrong & Co., Detroit Steel Products Co., Chicago Pneumatic Tool Co., Cramp & Sons, M. E. Brooks, La Petite Motor Car and Schug Electric Mfg. Co.

An Overflow Exhibition.

But this does not represent the whole show by any means. There is an overflow display at the Detroit Automobile Co.'s garage at 248 to 252 Jefferson avenue. The cars shown are the Winton, Woods electric and Franklin, the distributor of these machines not being able to secure sufficient floor space on the armory floor. The Locomobile Co., of New York, also has an exhibit here. The big hall of the old Biddle House, once a theater, has been fitted up and tastefully decorated in red and yellow bunting for the overflow exhibition.

Armory Handsomely Decorated.

The decorations at the armory are the finest that have ever been seen at a big show in Detroit. The general decoration is a mammoth canopy in gold with white trimmings, concealing the iron arches and scantlings. This was put up at a cost of $2,500 and was a part of the ceiling decoration last year at the coliseum in St. Louis at the national Democratic convention. Not an inch of bare post will be seen, all the woodwork being covered with bunting, some in delicate yellows, maize, blue or orange, and the effect when the hall is lighted is striking. All the exhibits of importance have big electric signs, and there are several thousand lights in the armory which, when all aglow, make a delightful picture.

There is one thing which, while not seen in the show, is going to cut a good deal of figure in this show; it is the second-hand car. While the show is for the purpose of selling new cars, the Light Guard Armory is situated right in the center of the automobile district where most of the garages are located. These garages are filled with second-hand cars dressed up for the occasion and many purchasers during the week will be enticed from the show proper to these places to look over the used articles.

Gallery Floored Over.

The gallery at the Armory that was such a bugaboo last year has been rebuilt into a level floor at an expense of $1,000, and not only does it make far greater convenience but it affords more space, and many more exhibitors are accommodated. It is not altogether improbable that the pinch for room will result in a move to make the Armory larger. It occupies now half a block on Larned street at the Brush street end. The directors of the company have been talking of extending the building to occupy the remainder of the block on the Randolph street side. This would give the Armory just double the space for an auto show. Three times as much space could have been sold this year without turning over a hand. There are some local agents even who had no chance to get their goods in, and those manufacturers and exhibitors who did get in would have bought from two to four times as much space had it been there to sell.

Visitors Studying Construction.

The feature of education is the one that appeals to the Detroit motorist or the prospective buyer. Despite the fact that Detroit is the center of gasoline automobile industry there are thousands of anti-automobilists in the city who will come to this show during the week determined no longer to be a motorphobes. Detroit has the automobile fever in earnest and the whole city will visit the show. Visitors showed on this first night of the exhibit that they are deeply interested, not so much in the looks of a car as in its mechanism, and the concern that can show the best engineering and workmanship will get the money.

Naturally, Detroiters are most interested in Detroit-made machines. As at the last show, it is scarcely possible to get near a Packard or a Cadillac, an Olds or a Ford. Perhaps, if a vote were taken among the people in the hall as to the most popular machine the Packard would lead, for the name seems to be in everybody's mouth. There was a steady stream to the Packard booth and Sunday afternoon, before the exhibit was installed, there were countless persons at the Armory looking in to see how the exhibit was coming along. At least half of those who came wanted to know "Has the Packard got here yet?"

Between 3,000 and 4,000 visitors attended the opening despite the fact that the thermometer registered twelve degrees below zero. Society was out in force and the beautiful gowns of the women and the evening dress of the men added to the brilliancy of the scene.

At the eleventh hour the show was saved from having no international character whatever by the arrival of the chassis of the Renault car, which was exhibited at New York and Chicago. The management here did not know it was coming, but made room for it somehow. Paul Gillett, who has it in charge, reports having taken orders for twenty-four Renaults in Chicago.

Large Variety of Types.

The variety of types on view is sufficient to interest the observer for the entire week. It would be erroneous to suppose that one can see all there is to be seen in a few hours. Small as the show is in comparison with what it should be, there is more than a student of automobiles could see thoroughly and understandingly in three days of constant looking around. It is noticeable, however, that the large cars are all on the same general design, side-entrance, longer wheelbase, roomier body and square hood. There is not one gasoline machine in the show that has not the box-like hood. There is also but one rear-entrance tonneau in the show. There are cars of all speeds and at all prices, although the tendency of the Detroit buyer will be to get deeply interested in cars ranging about the $1,500 mark.

Women find in the show much to interest them, and if the proportion of women on the opening night is to be taken as a criterion, they are nearly as much interested as their husbands and fathers. They are especially interested in the electric vehicles, which are being used a great deal in Detroit. The "town carriages" for the ladies have become very popular for shopping and calling and a number of them will no doubt be sold before the show closes. The Packard Motor Car Company is showing a gasoline town carriage with a coupé top that is very popular.

The Bibulous Elmore.

One of the exhibits is the new Elmore touring car—"the car that takes kindly to liquor." An experiment was tried a few nights before the show opened, at the garage Young & Miller, agents for the Elmore, for the benefit of the Y. M. C. A. motor school of Detroit. At this demonstration the Elmore Model 9 was run on whisky—the first time that an automobile has ever been run on whisky, and so far as has been recorded. The car was run successively on five kinds of fuel. The first one tried was ordinary gasoline to start the engine going well. Kerosene was used next, then followed alcohol, and after it whisky of a good grade was poured in. Finally a mixture of all four liquids was tried. With all of these the engine developed 1,500 revolutions a minute. One was poured in right after the preceding liquid had been exhausted, and it could readily be told when it was doing its work by the fumes from the exhaust. The same carbureter was used throughout. This should be good news to owners of Elmore cars, for if they are stranded out in the country where no gasoline can be bought they can run their car home on whisky or maybe mixed drinks. While one could not start the car up on whisky, if a quart of gasoline was carried always for an emergency it could be warmed up with that, and the whisky would do the rest. The test will probably be repeated at the show, as much interest has been manifested in it.

New Packard Model.

A brand new car that is on exhibition here and which was not shown at New York or Chicago is the Packard "two-passenger special." It is likely to become a popular car in Detroit, as everywhere else, as already Truman H. Newberry and John S. Newberry, two of Detroit's wealthiest citizens, have placed orders for the car. Others are in prospect.

The two-passenger special body is fitted the same chassis as the standard Model N, and the engine is of 28 brake horsepower. The carburetor is the new style and is water-jacketed, the water being heated by the cylinders, so that atmospheric conditions have no effect upon the mixture. Transmission is of the sliding gear type, giving three speeds forward. The entire transmission and the differential are enclosed in one aluminum casing, keeping them in alignment at all times and preventing any dust reaching them. There are four brakes, two internal and two external, on the rear wheels. The control is entirely on the steering wheel, with accelerator pedal at the base of the steering post. The wheelbase has a length of 106 inches, and every working part has either roller or ball bearings.

Cadillac Doctors' Car.

"The Doctors' Delight" is another new exhibit, a Cadillac model, not shown at any of the previous shows. It is designed especially for physicians in their professional work, and is the result of two years of study. The nucleus for this car was the Model E runabout, shown at the New York Show, but the idea has been developed, and now it is a far different looking article. On a Model E chassis is fitted a specially designed coupébody, now being turned out by the Michigan Steel Boat works of Detroit for the Cadillac people. The one on exhibition at the show is the first one made.

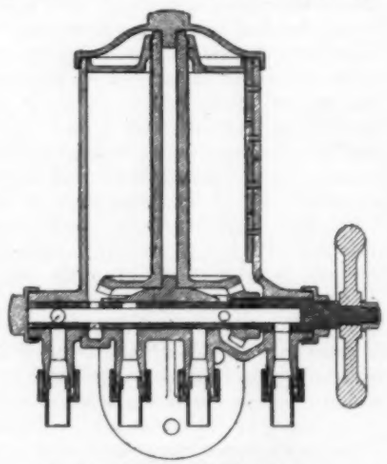
One of the interesting cars at the exhibit is the Franklin 10 horsepower 1,200-pound machine in which L. L. Whitman made his second trip from San Francisco to New York. The distance of 4,500 miles was made in less than thirty-three days, almost cutting in half the previous record of sixty-one days.

Still another car of great interest is the Winton Model A special limousine with side entrance. This is the car that was purchased at the New York Show by Andrew Carnegie, and is exhibited by his courtesy. The new aluminum bodies of the Wintons attract attention, and they are among the handsomest cars at the exhibit.

Force Grease Cup.

A multiple lead force feed grease cup has been placed on the market by the Brew-Hatcher Co., 32 Columbus street, Cleveland, O., for use on automobiles where the inconvenience of having to separately attend to a number of grease cups is considered undesirable. This cup, called the B. & H. force grease cup, is made with any desired number of leads, though the regular number is four.

Pressure is applied to the grease by a plunger moved down by a threaded rod passing through its center and turning in bearings at the top and bottom of the cup. A groove cut in the edge of the plunger



B. & H. FORCE GREASE CUP.

slides over a key or feather, so that when the threaded rod turns the plunger cannot turn with it. The lower end of the threaded rod carries a bevel gear which meshes with a bevel pinion carried on a horizontal shaft running, through the bottom of the cup, carrying on its outer end a hand-wheel. When the hand-wheel is turned, the central threader rod is rotated and the plunger moved up or down, according to the direction in which the wheel is turned. The downward movement produces a strong pressure on the grease, owing to the reduction in the gearing. The hand-wheel shaft is hollow, and contains ports, one for each feed, through which the compressed grease is forced into the feed pipes attached to nipples under the shaft. As the hand-wheel is turned, the plunger forces the grease downward, and the feed ports successively register with the outlets, a charge of grease being forced through each pipe in turn.

The cup is made of polished brass; it is easily filled, and has the advantage of being no larger when full than when empty.

Correspondence

A Criticism of the Gas Turbine.

Editor THE AUTOMOBILE:—

[151].—I have read Mr. Neilson's paper on the gas turbine, as you print it [issue of December 17, 1904].

A few years back I made an extended study of the gas turbine, of its possibilities from a thermic and a mechanical standpoint and, while my determinations were similar to those of Mr. Neilson as regards temperature cycles, I cannot agree with you as to the practicability of the gas turbine as a power mechanism for the future. I wish that I could, as I have several inventions relating to the subject which I am holding in abeyance, as I do not believe in that form of power apparatus. I abandoned the practical development of my ideas along that line to perfect my steam turbine-flash generator-power system, which I was developing at the same time as the gas turbine, and which I believe, from abundant evidence, will show a higher thermo-mechanical efficiency than will obtain with the gas turbine working through any cycle.

As long as you keep within the field of theory, the gas turbine is undoubtedly an enchanting subject for speculation and invention, as I found it, but as I reduced my hypothesis to a working theory I found the former were but adumbrations of the truth.

The problem of the gas turbine is not one of physics specifically, but one of mechanics, and the efficiencies indicated by the diagrams of Mr. Neilson, while theoretically possible as regards the possibility of working gas through such a range of temperatures, are, from a practical point of view, highly improbable.

In the first cycle illustrated, free air is compressed to a pressure of 42 pounds absolute, and heated by combustion with a hydro-carbon to a temperature of 973° C. absolute, thereby increasing the specific volume of the gas and rendering it capable of developing a greater energy than it possessed before heating, as the velocity with which a gas will flow from an orifice is proportionate to its specific density, the pressure being constant; then, it is projected that the gas then be expanded in a turbine engine reducing its pressure to that of the atmosphere and the temperature due to the final pressure. The thermic efficiency is shown to be 25 per cent. for this cycle of pressure and temperature range.

From my personal experiments with steam turbines, I do not believe that a turbine can be built on the single expansion, divergent nozzle type that will prove a thermo-mechanical efficiency over 80 per cent., and as any form of compound turbine is out of the question, because of the excessive temperature and the difficulty of cooling, we are confined to the type referred to; and, I cannot conceive of a compressor geared to the turbine which will deliver free air at 42 pounds pressure without a loss of 20 per cent., or at 80 per cent. efficiency, which combination of units would therefore show a net mechanical efficiency of 64 per cent., and the absolute efficiency of the mechanism would be 64 per cent. of 28 per cent., or 16 per cent., a figure attained by high class reciprocating engines of today, when in good condition.

The second cycle illustrated presumes free air compressed to a pressure of 300 lbs. absolute and heated to the limit of practical temperatures, 2,273° C. absolute, increasing the specific density of the gas accordingly. It is assumed that the velocity of outflow of a gas under these conditions of pressure and temperature would be 5,290 feet per second, if completely expanded to the initial pressure and temperature due to that pressure, and it is shown that the thermic efficiency of this cycle is 0.58 per cent. The velocity—5,290 feet per second—is based on the entire amount of potential energy in the gas at the pressure and temperature being translated into kinetic energy during expansion; i. e., the momentum of the gas at this velocity. As this second cycle is an ideal one, the problem is to ascertain if it is possible to realize it in practice, and what mechanical advantages would obtain with such an apparatus.

The velocity referred to is necessarily unattainable, for to reduce a gas at the temperature 2,273° C. absolute, a single expansion type of turbine only can be employed, and to effect a reduction in pressure of 300 lbs. to atmospheric pressure in a single expansion, a divergent type of nozzle is a further necessity. Now, it can be demonstrated that a loss of energy occurs in a divergent nozzle, as the augmentation in velocity is in a lesser ratio than the absolute expansion of the gas, for to acquire the maximum velocity the velocity of outflow should increase in proportion to the absolute ratio of expansion of the gas.

Assuming, however, that this maximum velocity, viz., 5,290 feet per second, is acquired by the gas under the conditions stated, one pound of fluid would develop an energy of 433,600 ft.-lbs., thus requiring 4.61 lbs. of fluid per horsepower per hour. To compress this weight of free air to 300 lbs. pressure absolute would require an expenditure of 0.405 horsepower, assuming 100 per cent. efficiency for the compressor. With 70 per cent. efficiency for the compressor, which is most probable for the range of pressure—15 lbs. to 300 lbs.—the gross expenditure of power would be 0.405 ÷ 70 (per cent.) = 0.58 (horsepower) leaving a margin of 0.42 horsepower available to drive the turbine to do external work. A turbine with an efficiency of 80 per cent. would be exceptional, and the *net free delivery* of power would therefore be 80 per cent. of 0.42 or 0.336 horsepower per gross horsepower expended. The mechanical efficiency would then be 33.6 per cent., and the absolute or thermo-mechanical efficiency of the cycle of compression, heating and expansion, would be .336 net horsepower × 0.58 (thermic efficiency) or 19.48 per cent., an efficiency attained by such high-compression direct-combustion engines as those of the Diesel type. The net effiicency, 19.48 per cent. is far too high for such a combination as it is based on a velocity of 5,290 feet per second, which is unattainable, and the net efficiency of this second cycle would not be much greater in practice than that of the first cycle, as the conditions are more difficult to attain.

The other cycles illustrated will show no better results when you attempt a working theory. A complete analysis of the third cycle, if the steam were generated and utilized distinctly apart from the gas, as in a separate generator and turbine, then condensed, would probably show a higher net efficiency than either the first or the second cycle, although the thermodynamic efficiency is lower.

I cannot see how any mechanical advantages would result from building this type of power machine; for, while the turbine would be smaller and lighter and reduce vibration to a minimum, as compared with reciprocatory engines, the compressor, which I do not believe can be run at as high a piston speed as the reciprocating engine, would therefore be larger and heavier and would generate by its reciprocating motion as much noise and vibration as the present form of engine.

The gas turbine, therefore, would be a more complex mechanism than the present reciprocating engine, as it would consist of a compound form of the latter, i. e., a series compressor and a turbine with just as many auxiliary appurtenances as the present type of engine.

The problem resolves itself into heating the gases in the "compressor" and expanding them *therein*.

The result of my studies of this problem is: That a gas turbine is possible only with a rotary "turbine" compressor, of high efficiency, which at once simplifies the mechanical end of the problem, but which, I believe, is another impracticability; and I had to abandon my cherished ideas because I could not, a few years ago, and I cannot at this time, believe in the future of such a motor.

I have based my conclusions on the use of large efficient units; the small units referred to by Mr. Neilson are entirely out of the question, as their efficiency would be 40 per cent. to 50 per cent. less than the units I have herein considered.

WARD TEMPLE MIXSELL.

Washington, D. C.

It will be noticed that the 0.405 horsepower, given by our correspondent as the expenditure required to compress the fluid developing a gross output of 1 horsepower, is in effect the ratio of negative to gross work. In other words, this ratio, according to Mr. Mixsell, is theoretically 0.405. In

Mr. Neilson's paper, and in our abstract of it, that ratio is given as 0.3; and the latter, which is based on the calculated curves for compression and expansion in Fig. 2, is correct if the hypotheses are correct.

In Kent, page 501 (sixth edition), a theoretical formula for the work of adiabatic compression and delivery of air is given, which, assuming the weight of a cubic foot of air to be 0.076 lb., works out to 0.316 horsepower, as the power required to compress and deliver 4.61 lbs. of air per hour; and this comes near enough to the theoretical ratio of the author. Possibly Mr. Mixsell's formula allows for cooling of the air after compression, which would be the proper thing for ordinary uses; but this is directly contrary to the author's assumption that the fluid is used immediately, with no cooling. As the fluid is in fact used immediately, and as it could, if necessary, be kept hot by the waste gases, it seems unnecessary to assume any loss here other than the ordinary mechanical losses of the compressor, which should certainly not exceed the 30 per cent. assumed by our correspondent. This would make the gross expenditure 0.3 ÷ 0.70 = 0.43 horsepower, leaving 0.57 horsepower available instead of 0.42.

On the other hand, if we are to suppose a mechanical efficiency of 80 per cent. for the turbine, it would seem to us more correct to regard the turbine as requiring proportionately more fluid, or 5.8 lbs. per hour, which in a compressor of 70 per cent. efficiency would consume 0.54 horsepower in compression, leaving 0.46 horsepower available for external work, instead of 0.336 This would make the thermo-mechanical or total efficiency 26.7 per cent.

It will readily be admitted that the reciprocating compressor is a very clumsy and wasteful device, and the need for a satisfactory rotary compressor is apparent, though seemingly a long way from realization. If the turbine were as good a compressor as it is a motor—which it is not and apparently never can be—the whole problem would be solved.

Valve Setting and Engine Wiring.

Editor THE AUTOMOBILE:—

[152].—Will you kindly give a general rule for setting the valves of a gasoline engine. Also give a method for wiring a car, and tell how to pick out the primary circuit poles from the secondary circuit poles. MOTOR.

Newark, N. J.

Generally speaking, the exhaust cam is set so that the valve commences to open 1-4 to 1-2 inch before the piston reaches the end of the power stroke, closing just after the crank has passed the dead center at the end of the exhaust stroke.

To give a method of wiring a car it would be necessary to know something about the system of ignition and the number of cylinders in the motor. In a single-cylinder car using jump spark ignition with vibrator coil, the usual method is to run one battery wire to the timer and the other to one of the terminals of the primary coil, cutting it at a convenient point and inserting a switch. The other wire from the primary coil is grounded on the frame, through which the current passes to the timer. One of the terminals of the secondary leads to the binding post of the spark plug while the other is attached to some part of the motor, the metal of which completes the circuit through the plug. If detailed information is desired, give particulars as to type of motor and system of ignition, and instructions for doing the work will be given. If the primary and secondary terminals of your coil are not marked, it will frequently be found that the former are placed at the end of the coil box and the latter on the top or side. When you have found the primary terminals, attach the battery wires, and the vibrator should start up; the secondary terminals will spark sharply on being brought close together if the connections are correct.

High Pressure on Steam Car Fuel.

Editor THE AUTOMOBILE:—

[153].—I wish to increase the supply of fuel to the burner of my steam carriage, and also to use a burner which requires an air pressure of from 80 to 100 pounds on the gasoline. Would this pressure in a 15-gallon tank be dangerous? It occurred to me that when the fuel was pretty well used out of the tank there might be an explosive mixture of gas and air remaining, forming a sort of compression similar to that in the cylinder of a gasoline motor just before the explosion takes place, which might ignite spontaneously. I am told that it is possible to compress the charge in a gasoline motor to a point at which it will fire without the usual igniting spark. F. M. H.

Salem, Mass.

The only danger that would accompany the use of an air pressure of 100 pounds per square inch on the fuel tank, with a burner intended for such pressure, would be in the inability of the tank to stand the strain. If you are sure of your tank and fittings, there is no danger. Spontaneous ignition can only occur when the charge is compressed with such suddenness that the heat liberated by compression has not time to become dissipated, as would be the case in a fast-running gasoline motor. Heat is essential to an explosion, and you could not get your tank hot enough to explode if you tried by using the air pump. The real danger is in the development of a leak, in which case the high pressure in the tank might cause it or a connection to burst or at least would force the gasoline out in a long jet which would be likely to communicate with the flame from the burner, causing a disastrous fire.

The "Best" Drive.

Editor THE AUTOMOBILE:—

[154].—Which is the best drive, single chain, double chain or bevel gear? Does bevel gear take more power? Do they have bevel gear drive on steam automobiles? Can a steam automobile be run in winter when it is cold? A. B.

Kankakee, Ill.

There is no "best" drive. What would be suitable in one case might be entirely out of place in another.

Bevel drive, as usually fitted, does not waste as much power as double chain drive; in other words, it is more efficient. A well-fitted and properly lubricated single chain would be slightly more efficient than bevel drive.

Replying to questions three and four, Yes.

Insulating for Interposition of Switch.

Editor THE AUTOMOBILE:—

[155].—I have a three-cylinder vibrating coil in my car connected with two sets of dry cells, six cells to a set. I wish to interpose a double-pole knife switch between batteries and coil in order to have an emergency switch operating through rods from the steering wheel. How can I thoroughly insulate switch from operating rods; if properly insulated, would the batteries run down any faster, or cause trouble in any way? R. B.

Middletown, Conn.

Use fiber tube for bushings, with fiber end washers, so that there will be no metallic contact at the joint. If more than one joint is used, insulate the one nearest the switch. The batteries will not suffer and no trouble should be experienced if the insulation is good.

Y.M.C A. SCHOOL OPEN TO WOMEN.

Special Correspondence.

BUFFALO, Feb. 13.—The automobile school of the educational department of the Central Y. M. C. A., of this city, will open February 16, with very good prospects. Those in charge have received assurance of support and coöperation from all parts of the country. There will be two courses this winter—a lecture course and a practical shop course. The lecture course, by special request, has been opened to women.

As last year, James H. Massie will conduct the school and Dr. P. E. Doolittle, who is president of the Toronto Automobile Club, will deliver the opening lecture. Dr. Doolittle has pent practically all his life in the bicycle and automobile business.

No Borrower.—"You must never borrow trouble," said the ready-made philosopher.

"I didn't," answered the proprietor of a new automobile. "I bought mine outright."—*Washington Star.*

Patents

Body Construction.

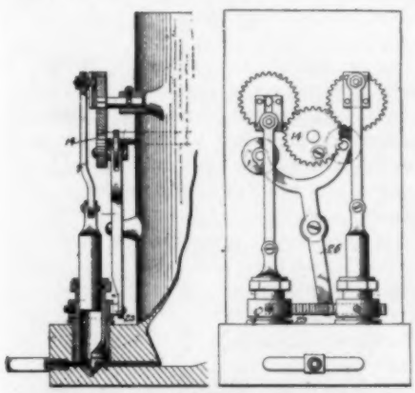
No. 779,477.—E. R. Hewitt, of New York.

A runabout body hinged at the back and cut across the footboard, so that it may be tilted up to expose the motor. A flexible joint or flexible coil in the pipe from the water or gasoline tank, contained in the body, obviates the need of breaking pipe points when the body is tilted.

Lubricator.

No. 779,609.—P. H. Knipper and S. C. Mackaye, of Rochester, N. Y.

A mechanical lubricator designed to feed heavy oils or the like, which would not flow



KNIPPER'S MECHANICAL LUBRICATOR.

readily through the check valves ordinarily used with mechanical oilers. In place of the check valves are suction and discharge ports positively opened and closed by valves formed in the base of the pump cylinder itself, which is rotated through a suitable angle at the beginning and end of every stroke. In the drawings two pumps are shown, worked by connected gearing. A cam roller on one of the gears *14* rocks a lever *26* connected to a rack *23*, which rotates the pump cylinders. The latter are kept tight by packing and stuffing boxes.

Steam Engine.

No. 778,632.—G. C. Cannon, of New York.

A poppet valve multi-cylinder single-acting engine, not very different from the Serpollet, but with slight novelties in the arrangement and form of the valve mechanism.

Tire Protector.

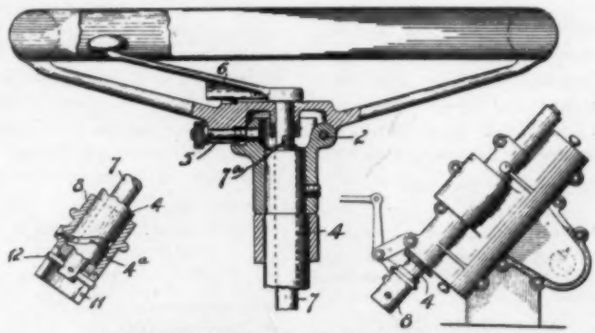
No. 778,768.—C. A. Worthington, of Trenton, N. J.

A *manchon* for cut tires, made up in the usual shape with canvas base and thickened rubber tread, like the tire shoe itself, instead of being made of rawhide as usual. It is laced over the spot to be protected.

Spark or Throttle Control.

No. 778,627.—F. H. Bogart, of New Britain, Conn.

A device for producing axial movement of a sleeve at the base of the steering column by means of relative motion between a contained shaft and the column, which is hollow. Rotation of the column and shaft together cause rotation of the sleeve, but not up and down movement, which latter acts on the spark or throttle through a collar, bell crank, and connections. At the same time, the hand wheel and lever acting on the column and shaft respectively are made to tilt for easy entrance. The pivot *2* and spring latch pin *5* provide for tilting the wheel, and the slotted end connection *7a* permits the handle *6* to tilt with the wheel. At the base of the column *4* a screw fast in the sleeve *8* enters a spiral slot *4a* in *4*, so that rotation of *8* compels it to move axially as well. The shaft *7* extends through *4* and carries a pin *12* which works in a slot *11* in *8*, thus rotating the latter on *4* when *6* is moved.



BOGART'S SPARK AND THROTTLE CONTROL.

Aluminum Solder.

No. 778,025.—R. Fortun and E. Semprun, of Madrid, Spain.

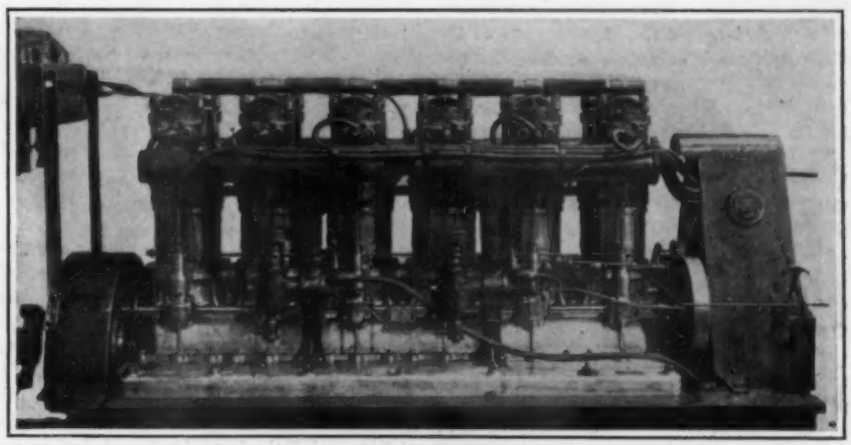
This solder is composed of an alloy of aluminum 100 parts, zinc 800 parts, tin 3,200 parts, and 100 parts of a metal "F S," prepared as follows: Metal F is prepared by melting two parts of silver, 6 parts (by weight) of aluminum, and 10 parts of tin, in a porcelain crucible, and adding to them about 10 per cent of the weight of the metals of live phosphorus, the crucible being immediately closed. The metal S is zinc sulphide prepared by adding pieces of sulphur to molten zinc, till the whole is combined. Metal F S is an alloy of 85 parts of metal F and 15 parts of metal S, melted together. The inventors claim the mixture thus described to be an absolutely perfect solder for aluminum and its alloys.

Pneumatic Tire.

No. 779,444.—B. C. Rowell, of Chicago.

A tire having a rawhide sheath either in one strip or in segments with scarfed and overlapping ends, inserted between the air tube and the case or shoe. It is claimed that the rawhide is well suited to be in contact with both tube and case; and, though its inner edges merely overlap next to the rim, it is claimed that the use of the sheath permits the carrying of unusual air pressures.

Gasoline and automobiles enter the British Isles free of duty.



NEW PANHARD MARINE MOTOR OF 150 HORSEPOWER.

Six cylinders of 170 mm. (6 11-16 inches) bore and stroke. Independent cylinders of steel, with applied copper jackets, valves on opposite sides of cylinders. One carbureter for each group of three cylinders. Ignition by both battery and high-tension magneto. The motor is designed for a new autoboat to race at Monaco.

THE AUTOMOBILE

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Success of the Cuban Meet.

The first automobile meet in Cuba seems to have proved a success in every way, and in all probability marks the permanent addition of a new annual fixture to the programme of the American season. The accessibility of Havana from Florida, its climate and roads, and the business possibilities of the Cuban trade, appeal to both racing men and manufacturers, and it is probable that next year will see a meet on a much larger scale. On the part of the Cubans, there is evident a welcome for the automobile both as an instrument of sport and for its utility, and thus far there has been no sign of hostility from any class.

That the meet was small in point of numbers was only the natural consequence of the F.E.C.A.A. fiasco; if the Florida contingent had been held together by a series of well-managed and interesting races, it would in all probability have moved on Cuba *en masse* instead of disintegrating at Ormond. Small as the number was, it exceeded the muster at the first Florida meet, and an equally rapid increase may be anticipated for the second year.

The Cuban road bore out the promises of its discoverer, and has proved an important addition to the small number of available speed courses; in spite of the one disadvantage of its narrowness, its grade and surface, and the possibilities of easy and effectual policing make it excellently adapted for road racing. The management of the meet was satisfactory, both in the transportation and customs and in the handling of the races. The hearty interest and effective coöperation of the Cuban officials did much to insure a successful outcome and to back up the original plans of the promoter of the meet. The victory of a car owned by a Cuban and handled by a Cuban driver was in itself a fortunate circumstance, making the hosts actual participants in the meet instead of mere spectators. The presence of President Palma with the Cabinet and foreign representatives gave additional standing to the affair as a national event.

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Annual Crop of Automobile Legislation.

In this, the annual harvest time of crude, ill-considered, and too often crooked, legislation, in which the tares so greatly outweigh the wheat, the automobile is receiving even more than its usual share of attention. The legislators of many states are busy with bills for the regulation of drivers and the limitation of speed, and it is probable that many of these measures will find places in the respective statute books before the motoring season fairly opens. That such legislation is in many cases necessary, is conceded by all reasonable automobilists, but in most cases there are good grounds of complaint as to the details of the bills.

The proposed legislation in some of the more remote parts of the country where the automobile is as yet but little known, exhibits some strange eccentricities, but the greatest extreme is found in the states of New York, New Jersey and Massachusetts, in each of which bills are pending for the legal crippling of all cars to a uniform limit of twenty miles an hour. Such a proposition as this is hardly debatable. From the temper of the proposers of the various bills it is evident that the assumed basis of speed would be under better than the average road conditions, if not on a good macadam or asphalt road, so that a car geared down to the legal 20 miles on such a road would be unable to travel only at a much lower speed on all but the best roads. Even if the provision were fair and just, as regards the maximum legal speed, it takes no account of hill-climbing or the numerous exigencies of touring, and it would fail utterly in the most essential point—the observance of a reasonable speed within city limits; the man who would be cut down to an average of fifteen miles over the ordinary suburban roads, would still be free to make his twenty miles an hour as soon as he entered upon the paved streets of a city.

Bad as it is, this proposal is only a fair sample of the ideas of the average legislator, and little is to be hoped for in the way of reasonable and effective legislation until the enemies of the automobile, both legislators and their constituents, can be brought to a practical and commonsense viewpoint. The American people, without regard to class, are going to use the automobile in the future as generally and as freely as they have used other means of transportation in the past, and, whichever side may be in the majority just now, it will not be long before those who are for fair and reasonable legislation will greatly outnumber those who are against it.

The suggestions of the ex-president of the Automobile Club of America, as made before that organization at a recent meeting and also before the Automobile Club of Philadelphia, are well worth public attention, not merely from the prominence of the speaker in automobile affairs or from his known position on this subject, but from their intrinsic merit. They include, in brief, a plan for the cumulative punishment of offenders against the speed laws, in no way severe or unreasonable at the outset, but likely to be thoroughly efficacious in the event of a third conviction; a system of garage control, and certain requirements, few in number and very simple, for chauffeurs. In addition, there is a demand for reliable and efficient braking power and a prohibition of the open muffler. The requirements are reasonable, evidently practicable, and there is good reason to believe that they would meet existing conditions. Even if not fully acceptable to those who desire only to restrict the use of the automobile, a careful study of them might lead to improvements in the bills now under consideration.

The final suggestion, of an expansion of the common speed limits within different zones, is only the natural complement of such a law justly enforced; when fitted with proper brakes and driven by an experienced and careful man, the automobile at a twelve-mile speed is no more dangerous than other classes of vehicles which are actually permitted to run even faster in city streets.

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Auto Display for Portland Exposition.

The automobile is no novelty on the Pacific Coast, where steam carriages made an early advent, and where the latest gasoline vehicles are coming into more general use every year. The conditions are necessarily quite different from those in the eastern part of the United States; there are fewer clubs, no large factories, no public contests except races, and the cities are very widely separated, so that the full development of the business possibilities of this section demands special exertions on the part of makers and dealers. The coming exposition at Portland, the Lewis and Clark Centennial, offers an excellent opportunity for the extension of the automobile trade, for as the first great exhibition in the Northwest, it will attract visitors from an extensive territory not readily reached by ordinary means.

While under the rules of the National

Association of Automobile Manufacturers the members are not permitted to exhibit directly at other than the two big annual shows, the branch houses and local dealers are free to act, and they would doubtless receive generous support from the makers whom they represent. The management of the exposition is desirous of securing an adequate representation from the automobile industry, and will do its part to make the display a success. The possibilities of the car as a vehicle for all classes are quite as great on the Pacific Coast as in other parts of the country, and the time has evidently come for a realization of them by a little enterprise and special effort.

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So far as official action is concerned, the status of the Gordon Bennett race is unaltered from last week, but there are indications of a change of program on the part of the Automobile Club of France, and it is probable that a satisfactory compromise will be reached by the separation of the Gordon Bennett race and the Grand Prix, the two being run on separate days.

The individual opposition of Great Britain, the United States, Germany, Belgium and other nations not only show no signs of weakening, but is rapidly unifying, and unless some steps are taken to remove the cause there will shortly be drawn a broad line, with France on one side and all motoring nations on the other. Such an outcome as this would be so obviously to the detriment of all sport that the question of which side might suffer most in an international boycott is not worth considering.

We note that the French papers, in particular *Le Sport,* whose editor first opened this new Pandora's box of automobile trouble, are in favor of two days of racing, one for each event, and some such solution will in all probability be accepted by the A. C. F.

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After the recent sensational attacks on the North Pole of automobile racing—the 30-second record for the mile—it sounds oddly to read of a world's record for the same distance in the comparatively slow time three-quarters of a minute, as made by Fletcher in Cuba, on Tuesday. The reason for this is that no distinction is made between records on the open highway and those on a course which is virtually the finest possible straight track, with no possible obstacles to look out for and an unlimited width of good running surface. Judged by all fair standards of comparison, Fletcher's record is most praiseworthy, and there should be some official classification which would put it distinctly at the head of all other records of its kind, entirely apart from the half-minute class on special speed courses.

After all, an automobile is nothing but a system of plumbing on wheels.—Chattanooga *Hitching Post.*

POWER BOATS TO TAKE THE STAGE.

Will Bid for Popular Favor in Madison Square Garden at Annual Exhibition that Opens Next Tuesday—Attractive Features and List of Exhibitors.

The predominating feature of the 1905 National Motor Boat and Sportsman's Show, which opens in Madison Square Garden, New York City, February 21, and closes March 9, will be power boats of all kinds, from the rowboat with diminutive motor installed to give the "spruce breeze" a rest, to the swift auto boat. The artificial lake in the middle of the Garden will contain sufficient water for actual tests of the boats, and one will be able to enjoy the novelty of a short voyage on the water under a roof, while the thermometer outside may be reaching for zero, and snow covering the streets.

Motors and accessories will be more prominent than ever before, and the prospective purchaser will have an excellent opportunity of "getting a line" on his boat or motor for the coming season. There will also be the usual exhibits of sporting goods; the Canadian railroads will have their picturesque log camps; the New Brunswick Fish Commission will send an exhibit of live game trout from Nova Scotia; and Maine, Virginia and the Adirondack region of New York will contribute displays that will make the Garden a sylvan summer region for the time.

The annual meeting of the Association of Engine & Boat Manufacturers, under whose management the show will be held, will hold its annual meeting at the Garden on Tuesday afternoon, February 28.

LIST OF EXHIBITORS.

Following is a list of exhibitors:

Fraser Hollow Spar & Boat Co., Greenport, L. I.
Motor Boat Pub. Co., New York.
Newbury & Dunham, New York City.
Am. De Dietrich Motor Car Co., New York.
E. H. Gotshalk Co., Philadelphia.
Williams-Whittelsey Co., Long Island City.
Buffalo Gasoline Motor Co., Buffalo, N. Y.
H. Neubauer, Palais de l'Automobile, New York.
Lamb Boat & Engine Co., Clinton, Iowa.
Lozier Motor Co., New York.
Gas Eng. & Power Co., and Chas. L. Seabury & Co., Morris Heights, N. Y.
Standard Motor Cons. Co., Jersey City.
Electric Launch Co., Bayonne City, N. J.
James Craig, Jr., New York.
Smith & Mabley, New York.
Siegel-Cooper Co., New York.
Pierce Engine Co., Racine, Wis.
Truscott Boat Mfg. Co., St. Joseph, Mich.
Panhard & Levassor, New York.
August Meitz, New York.
Clifton Motor Works, Cincinnati.
Mackay Engineering Co., New York.
Richardson Engineering Co., Hartford, Conn.
Spaulding Gas Engine Co., New York.
Mianus Motor Works, Mianus, Conn.
Eagle Bicycle Mfg. Co., Torrington, Conn.
H. W. Hubbard, Middletown, Conn.
Lacey Bros., Brown Cochran Co., Toledo, O., Lorain, O.
H. W. Jeffers, New York.
Wm. H. Brodie Co., New York.
Palmer Bros., Cos Cob, Conn.
Edison Mfg. Co., New York.
Smalley Motor Co., Bay City, Mich.
Carlyle-Johnson Machine Co., Hartford, Conn.
The Isham Co., Norwich, Conn.
Trebert Auto. & Marine Motor Co., Rochester.
C. L. Altemus & Co., Philadelphia.
Shaw Propulsion Co., (H. J. Dexter), New York.
Bankers' & Merchants' Agency Co., New York.
Geo. Henry Cowen, Cypress Hills, N. Y.
R. H. Ingersoll & Bro., New York.
Meyer, Limited, New York.
Klean-A1 Mfg. Co., New York.
Blauvelt Knitting Co., Newark, N. J.
E. M. Grunwaldt, care International Optical Co., New York.
Yeager Furniture Co., Allentown, Pa.
H. M. Stevens, New York.
Harry A. Chapman, Bangor, Me.
S. L. Crosby Co., Bangor, Me.
Wm. Roche, New York.
Remy Electric Co., Anderson, Ind.
Chas. E. Miller, New York.
Lambert Snyder Vibrator Co., New York.
Victor Metals Co., New York.
Rudder Pub. Co., New York.
Dayton Electrical Co., Dayton, Ohio.
Chas. F. Splitdorf, New York.
Doubleday, Page & Co., New York.
Tie Co., Unadilla, N. Y.
R. J. Dick, Elizabeth, N. J.
Cycle & Automobile Trade Journal, Philadelphia.
H. L. Rand, Worcester, Mass.
The Lunkenheimer Co., Cincinnati.
D. P. Van Gorden, Orange, N. J.
Am. Elec. Novelty & Mfg. Co., New York.
Herz and Company., New York.
Grand Trunk Railway Co., Detroit.
Canadian Pacific Ry. Co., Montreal.
Richelieu & Ontario Nav. Co., Montreal.
Intercolonial Ry. of Canada, Montreal.
Fishery Commission of N. B., Chatham, N. B.
Chas. R. Durkee & Co., New York.
Abercrombie & Fitch Co., New York.
Wm. Hjorth & Co., Jamestown, N. Y.
Douglas Mfg. Co., New York.
Bird, Jones & Kenyon, Utica, N. Y.
Foster Rubber Co., Boston.
G. W. Cole Co., New York.
Mehlbach Saddle Co., New York.
Armour & Co., New York.
America Co., Rockford, Ill.
Adirondack Guides' Assn., Saranac Lake, N. Y.
A. B. Moncure, (Reams, Dinwiddie Co.), Va.
Anglers' Co., Hartford, Conn.

BOSTON SHOW OUTLOOK.

Extra Hall and Gallery Space Added to Accommodate Applicants.

Special Correspondence.

BOSTON, Feb. 11.—Since the New York Show the exhibition of the Boston Automobile Dealers' Association to be held in Mechanics' Building, March 13 to 18, has had an unprecedented boom. Before January 1 practically all of the space in the big building as originally allotted had been sold, but some of the Boston dealers who went to New York said some things about the local exhibition that set the manufacturers and agents to thinking, and when Manager C. I. Campbell returned from Florida he found his desk piled high with applications for space. Many of these were from concerns that have never shown in Boston, and which heretofore have limited their efforts practically to New York.

As their presence in Boston was most desirable the problem arose of how to provide space. Some relief was found by taking the second balcony of grand hall, which will be allotted to exhibitors of accessories, so that the Boston Show, like

that in New York, will extend from basement to roof. To provide exhibition room for some of the big cars, the committee has under consideration the taking of Paul Revere Hall, which is a handsomely furnished and equipped concert and dance hall within the building. If this hall is taken some of the late exhibitors will be provided with excellent spaces.

The demand for room in the basement has been lively and with the contracts that are closed and those that are being negotiated it is safe to say that the motor boat division will be quite as complete as that devoted to automobiles. It was thought at first that the Mechanics' Building exhibition would be devoted almost exclusively to domestic cars, and that the foreign cars would go to the Importers' Salon in Symphony Hall, but lately a considerable number of foreign builders have taken space in the big show. Among the foreign cars that will be on exhibition are the Hotchkiss, Léon Bolleé, Decauville, De Dietrich, Napier, C. G. V., De Dion-Bouton and Mercedes.

The Importers' Salon is also benefiting by the increased favor of Boston as a show place, and Manager Eldridge says that it may be necessary to expand the show beyond its original limits and take in Horticultural Hall, across the street. Several makers of domestic cars have taken space in Symphony Hall.

INCREASED SHOW SPACE.

Restaurants of Convention Hall in Buffalo to Be Utilized.

Special Correspondence.

BUFFALO, Feb. 13.—The question of providing space for the automobile show at Convention Hall from March 6 to 11, is causing Secretary D. H. Lewis much concern. There are so many applications for space that much difficulty is being experienced in trying to satisfy all.

Mr. Lewis, who is managing the show for the Buffalo Trade Association, visited the hall Saturday and Sunday, and announced that he had concluded to cut up the two restaurants on the right and left side of the main entrance, so as to provide more space for exhibition purposes. This means that the restaurant privileges will be upstairs this year.

The 65th Regiment band has been engaged to furnish music during the week of the show. It has been decided by the executive committee of the Buffalo Automobile Dealers' Association to hold a banquet immediately after the close of the show, and an entertainment committee is arranging the amusement features for the affair.

Local automobile manufacturers have expressed the belief that this year's show will eclipse that of last year by far, and say it will be one of the most attractive displays that has been held in years.

NEW PARTS MAKERS MEMBERS.

A meeting of the board of directors of the Motor and Accessories Manufacturers was held at the Auditorium, Chicago, on Thursday, February 8, when the following new members were elected: J. H. Williamson Co., Brooklyn, N. Y.; Iron Clad Mfg. Co., Brooklyn, N. Y.; Electric Contract Co., New York City; C. W. Spicer, Plainfield, N. J.; Stolp Mfg. Co., Chicago, Ill. No other business of importance was transacted.

It is said that automobiles are to be tested for use in connection with the unfinished Russian railways.

LEGISLATION ENGAGES MOTORISTS' ATTENTION

Massachusetts Club and Trade Men Attend Hearings in Boston on Proposed Changes in Licensing and Speed Acts—Opposition to Bill Requiring Lights on Horse-Drawn Vehicles.

Special Correspondence.

BOSTON, Feb. 13.—Proposed legislation regarding automobiles and automobilists is occupying much of the time of the local enthusiasts, many of whom are in regular attendance at the State House, where committee hearings are in progress. The Boston Automobile Dealers' Association has been much in evidence and members of the Massachusetts Automobile Club, the Bay State Automobile Association, and other auto organizations throughout the state, are watching the progress of several bills so closely that there is little likelihood of the passage of any law injurious to the sport or industry.

The legislation proposed is contained in four bills, two of which were presented by the Massachusetts Highway Commission. A third measure is the Elliott universal lights bill, and the fourth is the so-called "gear" bill.

HEARING ON HIGHWAY COMMISSION BILL.

The first measure taken was the bill of the Highway Commission to make amendments in the registration law, so as to increase the judicial power of the commission by giving it the right to summon and swear witnesses; to cause a person transferring ownership of a machine to notify the commission so that his registration might be cancelled and a new one required of the new owner; to bar all but Massachusetts numbers from all machines operated in the state; and to permit novices to learn to operate without breaking the license law. Chairman McClintock explained to the committee on Roads and Bridges, which has the measures in charge, that to enforce its rules, the commission needs more judicial power, and that several bad complications have resulted from the change of ownership of a machine without a change of registration. He said that identification of foreign machines (those from other states), and punishment of the operators, if they are breaking the law, is impossible if there are five or six numbers attached to the machine. He said he would favor having foreign machines registered without a fee, the desire being merely to bring them under the control of the commission.

At this hearing the anti-automobile faction, which includes such prominent men as Major Henry L. Higginson, Colonel R. H. Stevenson, Arthur T. Lyman, Hon. Moorfield Storey and former Police Commissioner Robert F. Clark, showed its hand, and indicated that it is inclined to make a strong effort to have the penalties for overspeeding of automobiles made much more drastic than at present. The proposal is to have the law so amended that judicial power will be taken from the Highway Commission, and the punishment of over-speeding automobilists will be entirely with the courts, and will be based upon the "drunk" law, now in force. The idea of these men is that an automobilist convicted of over-speeding should be set free on the first offense, but on the second offense his license and registration should be revoked. Counsel claimed that the wealthy automobilists are quite willing to spend $15 or $25 in fines for the privilege of driving their high-powered machines over the roads at great speed. It was also provided that the fines be increased to a maximum of $500, and that a second or third offense carry with it a penalty of 30 or 60 days in jail. It was held that a month in jail would serve to quiet the ambitions of the most reckless chauffeur who desires to use the highways for a race course. Commissioner McClintock opposed this legislation and the opinions of other opponents will be heard later, when counsel for the "antis" presents his amendments in proper form.

OPPOSITION TO LIGHTING BILL.

The second measure that has been taken up is the Elliott lighting bill, which proposes that all vehicles propelled by muscular power, except those that are used by farmers or for commercial purposes, shall carry lanterns at night, that can be seen at a distance of 300 feet. This measure is favored by automobilists generally, and by horsemen and bicyclists, but at the hearing met with opposition from the L. A. W. representatives and from representatives of the rural districts, where it is believed that the bill is only an entering wedge and will be followed by an effort to have all vehicles compelled to carry lights at night. Those in favor of the measure pointed out numerous instances where collisions have occurred on the road because horse-drawn vehicles had no lights, and also instances when collisions had been averted because of lights. The opposition held that lights are a nuisance and an unnecessary expense. Some of the opponents of the bill admitted, however, that they always carry lights on their horse-drawn vehicles to prevent accidents. The L. A. W. representatives claimed that lights on a bicycle serve mostly to blind the rider and do not aid him in avoiding objects in his path.

PROPOSED SPEED LAW CHANGE.

The second bill that is backed by the Highway Commission is an amendment to the speed law giving the commission power to fix special rates of speed for different sections of highway upon petition of interested parties and hearing. Such a law, it is claimed, would merely legalize a practise that now exists, and on good straight stretches of road in the country thirty miles an hour should not be illegal, while eight miles an hour on crowded streets in some parts of Boston, is too fast. The automobilists are in favor of this bill, for if it became a law there would be much less trouble than at present from country police traps. The opposition comes from the towns and cities, which hold that such a law would be an unwarranted interference with the right of local self-government. The towns claim that as they own the highways, they have a right to make regulations as to speed of vehicles upon them, if they so desire.

NO FEAR OF LIMITED GEAR MEASURE.

The so-called "gear" law is along somewhat the same lines as that under discussion in New Jersey. It proposes that the gearing of all automobiles shall be so arranged that the speed of the cars cannot exceed that allowed by law. The automobilists do not fear the passage of this law, for they claim that its own absurdities will kill it. They ask what will be done, providing a machine is geared for fifteen miles an hour, the country rate of speed, and is operated on a park road where the rate is eight miles, or through a town where the rate is ten miles or less.

In grinding in valves it is not essential that there should be a bearing on every part of the seat, but there should be an unbroken circle of contact, with no doubtful spots. The closer the bearing is to the inside the better the valve will retain the charge.

NATIONAL LEGISLATION.

House Committee Favors Ferryboat and Power Boat Bills.

Special Correspondence.

WASHINGTON, D. C., Feb. 11.—The House Committee on the Merchant Marine and Fisheries has authorized a favorable report on the Goulden bill permitting gasoline automobiles to be run on and off ferry boats under their own power.

The committee has also reported favorably an amendment to the steamboat inspection laws granting exemption from the general duty of exposing an inspection certificate in favor of small open launches where such exposure under glass is practically impossible.

A proposed amendment of section 4426 of the Revised Statutes was recommended for passage by the committee. The sole change in this section is in the second paragraph thereof, in which motor boats of more than fifteen tons burden are brought under the general penal provisions of the title. At present these boats are subject to the requirements of inspection by virtue of this section, but the United States Circuit Court of Appeals has just rendered an opinion that while such boats are subject to the requirements of the section as to inspection and the carrying of licensed officers, the boats or their masters cannot be punished if they violate these requirements. This decision practically nullifies the effect of the whole section as it now stands. The change merely applies a proper penalty for a violation of a duty which was already required by statute.

VERMONT REGISTRATION LAW.

In Effect May 1, with Usual Provisions—Early Applications.

Special Correspondence.

MONTPELIER, VT., Feb. 13.—The blanks to be used in the registration of automobiles in accordance with the act passed by the last Vermont Legislature, have recently been received at Montpelier, by Secretary of State F. G. Fleetwood.

Among other things, this act provides that manufacturers of or dealers in automobiles or motor vehicles, may have a certain distinguishing number or mark which must be displayed on all registered machines. It requires that all motor vehicles or automobiles when registered, must have the address of the owner or chauffeur with a general description of the machine, the name of the maker and the kind and amount of motive power, deposited with the Secretary of State at the time the machine is registered.

Although this law does not go into effect until May 1 next, a large number of applications for registration have already been received by the Secretary, which indicates a general disposition on the part of owners of such machines to comply with the requirements of the law.

REQUIRES SPEED LIMITING GOVERNOR

Special Correspondence.

ALBANY, Feb. 11.—Assemblyman Nugent's bill to require an automatic speed regulator on every automobile, which was introduced in the Assembly yesterday, amends the State automobile law of 1904 by adding a new section to be known as sub-division 1-a. It provides as follows:

"No person shall operate a motor vehicle on a public highway unless the same is provided with a governor or speed regulator, suitably connected and controlling the motive power on the motor vehicle, whereby such motor vehicles will be prevented from traveling at a greater rate than one mile in three minutes; and whereby such speed regulator automatically and positively prevents the further travel of the motor vehicle at a greater speed than one mile in three minutes."

The bill provides as a penalty for the violation of the above mandate a fine of $100 or thirty days' imprisonment or both for the first or second offenses.

Assemblyman James J. Nugent is the Democratic representative from the Twenty-fourth district in New York County.

SPEED LIMIT, SIX MILES.

The mayor and common council of Glen Echo, a small village on the Conduit road, near Washington, D. C., have seen fit to adopt a regulation restricting the speed of automobiles and motor cycles passing through the village to six miles an hour. Glen Echo is not on the map, but its youthful mayor and its vigilant council, feeling that they must regulate something, have picked out the automobile, saying in effect that those who violate their speed law must submit to a fine of from $5 to $25. Washington automobilists use the Conduit road a great deal, and are, in fact, the only ones who do. Naturally, they do not regard Glen Echo's executive with very much favor.

ELLIOT C. LEE, OF BOSTON, NEW PRESIDENT OF THE A. A. A.

Isaac.—"What a party you take in your car, Abraham!"

Abraham.—"It pays. We divide the fines."—*Motor.*

RACING CIRCUIT PROPOSED.

Successive Three-Day Meets from Boston to Chicago.

The proposal to arrange an automobile racing circuit was again broached at the Ormond meet and is being discussed now in racing circles. It is proposed to hold meets of three days' duration on the mile tracks in New York, Philadelphia, Boston, Syracuse, Rochester, Buffalo, Cleveland, Detroit and Chicago. A new organization, which, it is said, is shortly to be organized in New York City, will control the circuit.

Dai H. Lewis, secretary of the Automobile Club of Buffalo, who sounded the parties interested in racing on the subject, found the prospects for a successful circuit encouraging. He states that the chief obstacle to automobile racing is the heavy expense, and that if this could be reduced, the chances for plenty of good racing would be much brighter. With a well-organized racing body managing a well-planned circuit, gate money would be received more regularly and frequently, he thinks, and traveling expenses would be cut down. It is probable that the races in New York and possibly Chicago would continue for a full week instead of the three days suggested for smaller cities.

COLONEL POPE ADDS HIS PROTEST.

In a letter to the Automobile Club of America, Col. Albert A. Pope, who has entered a Pope-Toledo racing car for the Gordon Bennett race, protests against the proposal of the Automobile Club of France to have a big road race run over the same course and on the same day as the international event. As the rules for the international cup race provide that each country shall be represented by not more than three cars, and the Grand Prix would have about forty cars, which might mean fifty or sixty cars racing over the course, Colonel Pope believes there would be great liability of accidents.

"Permit me to thoroughly commend the course taken by the Automobile Club of America," he writes to President Dave H. Morris, "in protesting against the plan of having the Grand Prix run over the same course and on the same day as the International Cup Race. When I entered our Pope-Toledo racer for this event, it was done with the definite understanding that we were in possession of the rules and regulations governing entries and contestant for that race. I should, therefore, deem it eminently unfair to find our car racing under other conditions than those stipulated. I feel strongly about this matter, but am sure that such action as has been taken by the Automobile Club of America and other clubs in Europe, will have the desired result."

SELF-HEALING INNER TUBE.

Special Correspondence.

AKRON, O., Feb. 11.—A contract has been closed with the Alden Rubber Co., of Barberton, O., to manufacture a new self-healing inner tube for tires, invented by F. B. Parks, of Grand Rapids, Mich. The tube is made inside out and the rubber is cut into corrugations by a knife. The tube is then turned and the tire and the corrugations then compress so that any small hole caused by a puncture is instantly closed by the expanding rubber. To further insure safety and durability, the tube is also made larger than the casing into which it is to be placed, which permits of no possibility of chafing.

How about that formula for an anti-freezing mixture?

HAMMERED THE LEGISLATORS

Speakers at Philadelphia Club Banquet Talked with Effect to Guests.

Special Correspondence.

PHILADELPHIA, Feb. 13.—It was an excellent idea, that of the officials of the Automobile club of Philadelphia, when at a banquet held at the Bellevue-Stratford on Saturday night last, they brought a few of their heavy guns to bear on some of the representative statesmen who grind out laws (not a few of them anti-automobile) for this Commonwealth. When the good dinner and the wine and cigars had sufficiently mellowed their targets and put them in a receptive mood the artillery was turned upon them by Winthrop E. Scarritt, Dave H. Morris, president of the A. C. A.; James B. Dill, C. H. Gillette and a few other speakers, and it's safe betting that the solons now have more respect for automobilists and automobiling. The leaven thus injected cannot fail ultimately to result beneficially when legislation for the "good of the cause" comes up at Harrisburg.

Among the more prominent guests of the occasion, besides the gentlemen mentioned, were Senator A. B. Roberts, who is responsible for some very queer local laws governing the operation of automobiles in the neighborhood of his residence in Lower Merion township; Senator W. C. Sproul, who evolved the unsatisfactory good roads law now on the statutes of the State; Senator John R. Rex, Senator Godcharles, Mayor John Weaver and Representative Ambler.

Under the toastmastership of Alfred N. Chandler the speechmaking lasted till midnight. Mayor Weaver, being in something of a hurry to attend another banquet, led off with a eulogy of the automobile, of which he has become an ardent admirer, with the ambition to be an owner ere long. He admitted that until he had traveled over the city's outlying roads in an automobile he had a very faint idea of their excellence and extent; the self-propelled vehicle enabled one to cover so much ground so very comfortably, and at a rate of speed that, owing to the perfect control, made it possible for the operator to traverse the roads safely at a fifteen or even a twenty-mile clip in the city limits, and with no more probability of danger to pedestrians and others than would be likely to result from a horse-drawn team traveling at seven miles an hour.

Senator Roberts' attempt to defend the harsh measures adopted by his home township in the treatment of automobilists was half-hearted, and it was evident that he is aware that his position is out of harmony with the present liberal feeling regarding automobiling. Before he finished his tone seemed actually apologetic. Secretary Gillette "threw it into" his hosts when he bewailed the fact that a city boasting upward of 3,000 automobiles could show but a meager membership of less than 200 in its representative automobile club. But Mr. Scarritt's talk was the hit of the evening. He assailed the legislature with facts and told them what they should do to automobilists who fractured the laws, outlining a system of legislation which he believed would reduce to a minimum the reckless driving of motor cars. His speech was essentially the same as the one he delivered at the meeting of the Automobile Club of America in New York on February 7, in which he proposed the revocation of drivers' license for fifteen days upon first conviction for exceeding the speed limit, for thirty days for the second infraction and for a year for the third conviction, all in addition to the usual penalties provided in existing laws. His recommendations also covered supervision of garages by law.

Mr. Scarritt's remarks were listened to with attention, and at the conclusion he was given a liberal "hand."

The banquet was the second chapter in the policy recently adopted by the A. C. of Philadelphia to overcome the strained relations existing between legislators, both state and local, and automobilists generally, but of this city in particular. The success of the function was so obvious that efforts along the same line will be continued.

TO FIGHT SAXE BILL.

Special Correspondence.

BUFFALO, Feb. 13.—Indignation is expressed by members of the Automobile Club of Buffalo over the proposed amendment to the Hill-Cocks automobile law, which will be presented at Albany by Senator Saxe on February 21. The amendment makes it a misdemeanor to violate any section of the law, as it now stands, and provides as punishment a fine or imprisonment or both. In other words it makes a man who violates the law a criminal. The Buffalo club proposes to fight the bill to the end, and when the measure comes before the State Legislature, President Augustus H. Knoll, of the club, and its attorney, will appear before the members of the Legislature and argue against it.

The Hill-Cocks bill was drawn up by ex-president William H. Hotchkiss, of the Automobile Club of Buffalo. Local automobilists claim that the principal reason for Senator Saxe introducing this amendment is on account of reckless driving around New York City. They claim that because there are reckless drivers in New York City is no reason why every motorist in the state should suffer.

NOTES OF THE CLUBS.

OTTUMWA, IA.—The Ottumwa Automobile Club now has a membership of twenty-five, and is in a flourishing condition. Plans for race meets and runs to nearby points are now being made. The officers for the current year are J. F. Kerfoot, president, and Dr. A. C. Lee, secretary-treasurer.

SALT LAKE CITY.—Twenty-five automobilists recently got together and decided to organize an automobile club on the most approved lines. One meeting has been held and officers elected, while at another meeting to be held at an early date, the organization will be completed. The new club proposes to take an active interest in the improvement of the roads of the district, and in the discouragement of reckless driving.

BUFFALO.—Frederick T. Elliott, of Syracuse, secretary to the board of directors of the New York State Automobile Association, was in Buffalo recently, making arrangements with William H. Hotchkiss, president of the state association, for the annual meeting of the board, which is to be held in Buffalo on Friday, March 10. The local automobile show opens on the same day. The board of directors consists of one man from each of the thirteen automobile clubs affiliated with the state organization, and the three officers of the state association, making a total of sixteen members.

BRIDGEPORT.—At a recent meeting of the A. C. of Bridgeport, the question of club quarters was discussed at some length, some members being in favor of securing new quarters nearer to the business center of the town than the present Park City garage. It was decided, however, to renew the lease of the rooms. The work of the coming season was outlined to some extent, and a committee appointed to arrange for entertainments, which will be given monthly. A campaign for the enlistment of new members will be inaugurated at once.

PHILADELPHIA.—The A. C. of Philadelphia, through its secretary, H. Bartol Brazier, has made an arrangement with the authorities of the town of Hammonton, midway between Philadelphia and Atlantic City, for locating warning signs at either end of the town to indicate where the Hammonton limits begin and end. As in most country towns, the boundaries are some distance away from the built-up portions, and automobilists, unless familiar with the route, are liable to be arrested for doing state speed in the sacred limits of the town. This agreement is a result of the pacificatory campaign recently inaugurated by the club.

DETROIT, Feb. 6.—The recently organized Detroit Automobile Club has temporarily gone into quarters in the ordinary of the Russell House. It will occupy the ordinary until its rooms in the basement of the hotel can be decorated and fitted up, which will take a month or more. The membership of the club has been growing during the past fortnight, and President William E. Metzger says that there are many applications on the list.

"We are soon going to broaden our scope of activity," he said, "and let in men who are not in the trade. There are good men in Detroit who simply own autos whose company we would like to have and whose influence will be a help."

TOLEDO.—The Toledo A. C. is making preliminary plans for several races to be run here this season. The dealers and manufacturers are entering into the plans with enthusiasm. This will be a new feature added to local automobiling. The club will also conduct week-end runs during the pleasant months. These were started last summer and proved both pleasant and popular. Dr. C. P. Wagar, secretary of the club, will return to the city in a short time and his return will undoubtedly be the signal for renewed action, as he is one of the most enthusiastic automobilists in the city. He has been at work perfecting the clubs' country road maps, which will be a great assistance to the members. Dr. Wagar has been spending the winter at a western watering place.

There is no time like the present for making good a little defect in an automobile. Things of that sort never grow smaller—they almost invariably grow larger.

Curg Powell, who works at F. B. Beckman's hardware store, has invented a new-style automobile, a model which may be seen in the show window at the store. The wheels are made of stovepipe elbows, the bed of roasting pans, the hubs of stovepipe and flue stops and sheets of stovepipe iron form the fenders. Parts of a sausage stuffer are used as the steering handle, while two large tin funnels serve the purpose of searchlights. It is the only real automobile ever owned in the city, and it is attracting a great deal of attention.—*Arthur, (Ill.) Graphic.*

MOVE MADE FOR INDEPENDENT SHOW.

Unlicensed Manufacturers and Importers Quietly Organizing to Promote Exhibition in New York Independently of the Licensed Association.

Another change in the aspect of the automobile show question, less sudden than that caused by the startling action of the Association of Licensed Automobile Manufacturers, in leasing Madison Square Garden for show purposes, but not less radical, is likely to be the outcome of an informal meeting of a number of the "independent" or unlicensed automobile manufacturers and importers, held during the Chicago show, when it was decided to take action on the exhibition matter.

The meeting was merely a preliminary affair, and another is to be held shortly, when a definite course of action will be decided upon and active operations begun, with a view to evolving an automobile show for unlicensed manufacturers. It is said that the importers may join forces with the American independents in the show issue, and that negotiations looking to such an amalgamation are in progress.

Neither the manufacturers nor importers will give any information, but they admit the facts here given. It is understood that the Sixty-ninth Regiment Armory, at Twenty-seventh street and Lexington avenue, New York City, is being considered as a suitable building in which to hold the proposed show. The structure is not yet completed, but when finished will make an excellent exhibition hall.

CLEVELAND'S NEW "ROW."

Occupation of New Euclid Avenue Block Creates Another Auto Center.

Special Correspondence.

CLEVELAND, Feb. 11.—Cleveland has a new automobile row. A new block extending from 310 to 330 Euclid avenue has just been taken possession of by three concerns identified with the industry. A few doors from this is another new establishment. These buildings extend through to Huron street and directly opposite on that street are the establishments of the Baker Motor Vehicle Company, the Automobile Garage & Repair Company and the Winton retail store, making seven stores within a stone's throw of one another.

The store at 330 Euclid avenue is occupied by the new concern, to be known as the Ohio Sales Department of the Royal Motor Car Company. E. Shriver Reese, president of the Cleveland Automobile Club, has the Ohio agency for the Royal line. The management of the business will be in the hands of George S. Waite, formerly with the White Sewing Machine Company. The store is simply a salesroom, and only one car and a chassis will be displayed. Repairs will be taken care of at the factory.

At 324 Euclid avenue and 403 Huron street is the new salesroom of the Ohio Oldsmobile Company, of which Ralph Owen is manager. As heretofore, he will handle the Olds and the Franklin. Repairs and storage will be taken care of at the old establishment at 411 Euclid avenue, which will be retained.

The Fisk Rubber Company, of Chicopee Falls, Mass., has opened a branch at 318 Euclid avenue and 389 Huron street, in charge of Morris Penrose. A large stock of Fisk tires will be carried and repairs to tires of all kinds will be made. The repair department is fitted with a heater for retreading tires, a number of vulcanizing outfits, repair tables and other appliances for first-class work. The location of the store is excellent. The company will make an effort to introduce its new double-tread tire, which is said to have many advantages over the ordinary moulded tire.

OUR FOREIGN CUSTOMERS.

How American Exports Are Divided Among the Different Countries.

Special Correspondence.

WASHINGTON, D. C., Feb. 11.—Considerable interest attaches to some figures compiled from the official records showing the exports of automobiles and parts of same, and the countries of destination, during the fiscal year ended June 30, 1904. The grand total of exports during this period was $1,895,605. The exports, by countries, were as follows:

EUROPE.—Austria-Hungary, $3,500; Belgium, $22,971; Denmark, $11,549; France, $92,576; Germany, $97,303; Italy, $10,567; Netherlands $11,909; Portugal, $1,904; Roumania, $240; Russia on Baltic and White seas, $64,981; Russia on Black sea, $9,861; Spain, $17,820; Norway, $10,794; Sweden, $9,625; Switzerland, $5,440; United Kingdom, $649,641; total, $1,020,681.

NORTH AMERICA.—Bermuda, $775; Nova Scotia, New Brunswick, etc., $16,359; Quebec, Ontario, Manitoba, etc., $308,720; British Columbia, $5,873; Newfoundland and Labrador, $997; Nicaragua, $38; Mexico, $113,280; British West Indies, $5,758; Cuba, $46,999; total, $498,799.

SOUTH AMERICA.—Argentina, $12,997; Brazil, $2,346; Chile, $1,693; Colombia, $954; Ecuador, $10,442; Dutch Guiana, $14; Peru, $4,031; Venezuela, $2,629; total, $35,106.

ASIA.—Chinese Empire, $12,389; British India, $70,479; Straits Settlements, $2,648; other British East Indies, $1,440; Dutch East Indies, $2,335; Hong Kong, $780; Japan, $22,875; total, $112,946.

OCEANIA.—British Australasia, $164,130; Philippine Islands, $4,252; total, $168,382.

AFRICA.—British South Africa, $57,202; Portuguese Africa, $654; Egypt, $1,835; total, $59,691.

FIRE IN PUNGS-FINCH PLANT.

Special Telegram.

DETROIT, Feb. 14.—Fire destroyed part of the plant of the Pungs-Finch Automobile and Gas Engine Co., at 1524 Jefferson avenue, at 3 o'clock this morning. The boiler room, pattern shop, blacksmith shop and boat building department were demolished. The temperature was 17 degrees below zero at the time and many of the firemen had hands, faces or feet frozen while at work. The loss is estimated at $30,000 by W. A. Pungs, covered partly by $25,000 insurance.

C. A. Duerr & Co., Inc., the New York agents for the product of this company, state they have been advised by the company direct that, while the fire was in a way a disastrous one, it affected but little the automobile department, and that car deliveries will be delayed not more than a week or ten days.

Do not forget that after a valve has been ground several times the stem is, in effect, lengthened and the lift of the valve is correspondingly increased so that the valve may be prevented from closing tightly, because the stem is held up by the lifter. If this is the case, grind a very small amount off the end of the stem so the valve will come to its seat solidly.

RECENT INCORPORATIONS.

Bates-Odenbrett Automobile Co., Milwaukee; capital $30,000; incorporators, John W. Foster, Josephine Foster, Albert G. Bates and George L. Odenbrett.

Iowa Automobile & Supply Co., Des Moines, Ia.; capital, $8,000; officers, C. R. Prouty, president, and F. S. Dusenberg, secretary-treasurer.

Moulton Jordan Motor Car Co., Minneapolis, Minn.; capital, $120,000, to manufacture automobiles; incorporators, E. H. Moulton, Jr., Theodore C. Jordan and Earl A. MacVicar.

Ford Kerosene Engine Mfg. Co., Newark, N. J.; capital $125,000; incorporators, Henry Hosier, Samuel Oshinsky and Henry B. Ford.

Paterson Automobile Co., Paterson, N. J.; capital $10,000; incorporators, George M. Rusling, E. DeWitt Carlough and Arilla I. Carlough.

Franklin Automobile Co., Milwaukee; capital $5,000; incorporators, Henry W. Ramien, Richard B. Ramien and H. L. Ramien.

Middleton Mfg. Co., Milwaukee; capital $200,000; to manufacture automobiles and automobile parts; incorporators, William C. Middleton, Frederick S. Middleton and Albert S. Schrewe.

Miller & Wilson Automobile Co., Colorado Springs, Colo.; capital $10,000; incorporators, R. A. Miller, H. A. Wilson and L. B. Miller.

Curtis Automobile Co., Milwaukee; capital $10,000; incorporators, Harry Landauer, Frank Thanhouser and Orin L. Curtis.

Paulding Motor Co., Paulding O.; capital $10,000; incorporators, W. H. Phipps, C. E. Price, J. H. Laughlin, E. W. Travis and C. W. Burgner.

Auto & Motor Co., Baltimore; capital $7,000; to deal in automobiles, launches and the like.

Lamb Auto Co., Clinton, Ia.; capital, $10,000; to conduct an auto livery.

Twin City Auto Car Co., Minneapolis, Minn.; capital, $25,000; incorporators, N. L. Hills, F. W. Couse and E. B. Hills.

Young & Co., Newburgh, N. Y.; capital, $5,000; to manufacture automibiles; incorporators, Arthur Young, Walter H. Whitehall and Ralph W. Whitehall.

Times Square Automobile Co., New York; capital, $10,000; to manufacture automobiles; incorporators, M. Froelich, J. Froelich and F. Block.

Importers' Automobile Co., Chicago; capital, $2,500; automobiles and electrical sundries; incorporators, Ralph W. Condee, L. D. Condee and B. G. Kuehn.

New England Motor Tally-Ho Co., Boston, Mass.; capital, $50,000; officers, Ralph S. Bartlett, president, and Alfred Bartlett, treasurer.

Whitson Auto-Press Co., New York City; capital, $200,000; directors, John G. Whitson, Robert Schalkenbach andn Edmund Walcott.

The Atlantic Co., Augusta, Me.; capital, $50,000; to deal in motor vehicles; incorporators, Jacob R. Huntington, John S. Payen, Howard E. Bartlett, M. H. Simmons, E. F. Whitten, Charles L. Andrews and G. R. Haddock.

Oxford Motor Co., Pittsburg, Pa.; capital, $500,000; to manufacture motor vehicles; incorporators, D. G. Neagley, J. K. Neagley and L. E. McLain.

Leinbach Bros. Co., Detroit, Mich.; capital, $10,000; to deal in automobiles and accessories; incorporators, E. L. Leinbach, Clyde Leinbach and A. W. Muer.

Writing of the results obtained with the four Olds delivery wagons loaned to the Detroit post office for service during the Christmas rush last December, the postmaster at Detroit is quoted by *Scientific American* as follows: "The service rendered by these machines was, on the whole, very satisfactory, and their use was instrumental in securing the delivery and collection of large quantities of mail matter in a very short period of time, and they were also of material assistance in the matter of making quick special trips to our station postoffices. It is no doubt a fact that the aforesaid congestion would have burdened the offices for one or two extra days, had not these machines been employed."

The Wilson & Hayes Mfg. Co., of Detroit, Mich., manufacturers of automobile hoods, mud-guards, tanks, body irons and other forged and sheet metal specialties, has been succeeded by the Hayes Mfg. Co., T. H. Wilson having retired. Officers are as follows: President and general manager, H. Jay Hayes; vice-president, E. F. Schultz; secretary and treasurer, Herbert P. Carrow; superintendent, B. H. Thompson. Additions are being made to the Detroit plant of the concern, and arrangements are being made for a branch factory at Lansing, Mich., to take care of contracts with the Olds Motor Works, the Reo Motor Car Company and other manufacturers.

Proprietors of garages in Minneapolis Minn., are to be kept strictly under the strong arm of the law, if Fire Chief Canterbury has his way.. That official has asked the Minneapolis city council to pass an ordinance regulating the conduct of garages and giving firemen power to make arrests where the rules are violated. The fire marshal, who has made a report on the condition of garages, suggests that the insurance companies be consulted in preparing the regulations. An ordinance already in force regulates the storage of gasoline.

The Fisk Rubber Co., of Chicopee Falls, Mass., recently established a branch in Kansas City, Mo., this being the eighteenth Fisk depot. The company states that each of its branches not only carries in stock a complete line of Fisk tires, but is fully equipped for making tire repairs of any kind or extent, from the smallest bicycle tire to the largest pneumatic used on an automobile, not only on Fisk tires, but on tires of any make whatever. The men in charge of the repair shops are all factory-schooled, and are capable of building a tire throughout if necessary.

The Martin Automobile Co., of San Juan, Porto Rico, which has been running a line of Knox automobiles in public service between Camuy and Aguadilla, a distance of fifty-four miles for the round trip, for nine months, has not missed a day nor injured a passenger, it claims. During a January storm railway tracks were washed out, telegraph wires broken down and the roads in exceedingly bad shape; but trips were made as usual by the automobiles.

The Diamond Rubber Co., of Akron, O., expresses a pardonable pride in the fact that the steam racer of Louis Ross, which made itself famous at the Florida race meet, was equipped with Diamond tires, only one set being used for the whole series of races and no tire trouble being experienced. This car made a mile in 38 seconds and a kilometer in 24 1-5 seconds. The Diamond Rubber Co. claims the distinction of having manufactured the first pair of pneumatic tires made in America—single tube or hose-pipe tires.

Edward S. Esty, of Brookline, Mass., an eleven-year-old lad, recently made application to the Massachusetts Highway Commission in Boston for a driver's license, which was granted after an hour's driving by the boy in his father's 24-horsepower Peerless car, through the crowded streets of Boston. The young chauffeur, who is a big boy for his age, is not only able to drive his father's car, but is well versed in its mechanical details.

The Continental Caoutchouc Co., of New York City, American agents for the German Continental tires, states that all the five cars which took part in the Cuban 100-mile road race near Havana were equipped with Continental pneumatics, with the exception of the Renault which took second place. The 60-horsepower Mercedes, driven by Carricaburn, which won the Havana Municipal Cup, had no tire trouble whatever during the race.

Maurice G. Bernin, the French chauffeur, who has done such excellent work with W. Gould Brokaw's Renault racing car, both on the track and the road, has given up his position with Mr. Brokaw and will shortly leave for France, where, it is understood, he will drive a special Renault racing car in the Gordon Bennett race. The intervening time will be spent in becoming familiar with the car and the course.

The Springfield Hat & Cap Co., 29 Taylor St., Springfield, Mass., sent a handsome automobile cap as a Christmas gift to young King Alfonso of Spain, and received in return, a letter from the King's private secretary, stating that though not customary, the gift would be accepted in appreciation of the spirit in which it was sent.

The automobile department of the Standard Wheel Co., of Indianapolis, Ind., has moved into its commodious new quarters at Standard Ave. and Division St., Indianapolis, where the Overland automobiles will be manufactured hereafter. A testing track will be built in the grounds around the factory.

Henry C. Cryder, receiver in the case of V. Everett Macy vs. The Automobile Company of America, has filed his report of distribution at the State House, at Trenton, N. J. It shows that he has distributed $5,012.74 among the creditors of the company, as the final dividend allowed by an order of the court, dated November 15 last.

A new salesroom was recently opened by the National Battery Co., of Buffalo, N. Y., in the new Rich Building, at 719 Main St., in that city, where electric pleasure automobiles of various makes, equipped with National batteries, are on exhibition. A special display of electric trucks will also be made.

A garage, repair shop and salesroom has been established in Holyoke, Mass., by C. R. Dunham and N. C. Mansir, under the name of the Holyoke Auto & Repair Station. The agency for the Phelps car has been secured. The new establishment is located on Division St., and has a floor space of 5,000 square feet.

To secure funds for the construction of improved roads throughout the State of Pennsylvania, the City Council of Scranton proposes a tax of five cents a ton on coal. Such a tax would result in a revenue of $750,000 annually in Lackawanna County, of which Scranton is the seat.

A new concern which has recently entered the automobile field is the Hicks Automobile Co., of 1,384 Bedford Ave., Brooklyn, N. Y. Elias Peter Hicks, M.D., is president and George H. Hicks is secretary and treasurer. The concern has the Brooklyn agency for the Reo cars.

F. H. Adams, formerly manager of the commercial car department of the Reed-Underhill Co., has been appointed New England representative of the new Knox Motor Truck Co., of Springfield, Mass., and has opened a salesroom at 541 Tremont St., Boston.

The Queen City Automobile Co., of Cincinnati, O., has been incorporated under the laws of the state of Ohio with a capital stock of $5,000, by H. C. Wendel, Louis F. Liebenthaler, Katharine Wendel, Osborn Sheller and Otto Renner.

Some noted drivers will be in Denver on Memorial Day to participate in the special racing program which has been arranged. Among other fast drivers who will come will be Frank Kulick, with the Ford.

The Premier Motor Mfg. Co., of Indianapolis, Ind., has removed from 930-936 Fort Wayne Ave., to the corner of Georgia and Shelby streets, Indianapolis, where the business is now being conducted.

Interest in power boating is increasing so rapidly in Philadelphia that promoters are seriously considering holding a show of boats, engines and accessories in one of the local armories during the coming spring.

L. E. Hoffman, who was formerly at the head of the Hoffman Automobile Mfg. Co., now the Royal Motor Car Company, has left Cleveland to become identified with the Reliance Motor Car Company, of Detroit.

The New England agency for the Yale and Northern cars has been placed with the Frank Ridlon Co., which has opened a salesroom at 41 1-2 Columbus avenue, Boston.

The Meadville Vise Co., of Meadville, Pa., has changed its name to the Barrett Machine Tool Co. This concern manufactures the Barrett horizontal cylinder boring machines and Barrett vises.

H. L. Dunham, having secured the New England agency for the Royal Tourist, has opened a salesroom at 185 Columbus avenue, Boston.

Edward Le Prohon has opened offices at 5 Park Square, Boston, having been appointed New England representative of the Minimax Automobile Fire Extinguisher Co.

H. M. Masters has succeeded W. H. Stimpson, 20 Columbus avenue, Boston, and will represent the Wayne automobiles in New England.

Hobert M. Adams, who was chief assistant at the White garage, in Cleveland, has succeeded George S. Waite as manager of that establishment.

The Reo Motor Car Company, handling the Reo, has opened a branch at 254 Euclid avenue, Cleveland, in charge of Otto Owen.

N. H. Saunders, of 43 Columbus avenue, Boston, has been appointed New England representative for the Acme cars.